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PHARMACY OF THE CINCHONAS.

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There are perhaps, few articles of the Materia Medica of more importance than the Cinchonas, even when considered apart from their relations to the sulphate of quinia as an antiperiodic. The proper and judicious use of tonics has of late years, been practically recognized to be one of the prominent studies of the physician who is skilful in the practice of his art; and the best and most generally applicable of all tonics are the Cinchonas.

That the artificially prepared salts of quinia are tonic there can be little doubt, though this has been questioned by good authorities, and yet this is not their original, nor their most appropriate use. They should be held and used only as antiperiodics, and as agents for the production of quinism. Many good authorities have taught that the alkaloids and acids of the Cinchonas, in their natural condition and combinations, are best adapted to use as tonics, and the writer desires to add his testimony to that of such authorities, and to go still further, believing that these natural combinations *alone* are well adapted to use as tonics; and that sulphate of quinia is as inferior to them as tonics, as it is superior as an antiperiodic. The main advantage gained by the extraction of quinia and its recombination with

other acids, is to facilitate its easy and definite administration in large doses without embarrassing the stomach with the greater volume of the bark or its preparations, and as these large and accurately adjusted doses are only required as antiperiodics,—or at least only outside of and beyond the sphere of tonics proper,—the ordinary salts of quinia should be reserved for such uses, and be replaced to a large extent by preparations of the bark. It is not uncommon to hear of eminent pathologists and eminent diagnosticians, but far less common to hear of eminent therapeutists, yet the latter class can alone be successful practitioners of medicine, whilst of these some of the most successful, both of the past and present, are found using their natural remedies in their simplest form, and reasonably, if not wisely doubting whether convenience of administration be not often attained at the cost of medicinal efficacy and certainty. Without being justly charged with going back in pharmacy,—and even while urging its more rapid progress,—it may be doubted whether any more effective or more certain preparations of the Cinchonas than the simple infusions of the Pharmacopœia can ever be used, provided the quality of the bark can be assured. These are by no means inelegant preparations, may be easily aromatized at pleasure, and can only be discredited by a squeamishness on the part of patients which is too much encouraged by the money-making devices of the pharmacist.

There is another important reason why physicians are not justified in the use of quinia salts as ordinary tonics. It is well known that the Cinchona forests which yield the best varieties are becoming rapidly exhausted through the large demands upon them, and the wasteful methods of collecting the barks, and year after year the richer and more valuable Cinchonas are becoming dearer and more difficult to obtain. This has made it necessary for quinia manufacturers to give up the use, in a great measure, of these more valuable species, and substitute the cheaper kinds, which yield a smaller proportion of the alkaloid. Now, although quinia is the chief if not the only antiperiodic ingredient in the Cinchonas, it has never been reasonably doubted that the other alkaloids, the acids, and the astringents of the barks are important and valuable tonics, if not equal to quinia in this respect.

Then, as in the extraction of quinia all these other derivatives are in great measure sacrificed and wasted, it is not difficult to see that the use of artificially prepared quinia salts involves, beside the expense and profits of extraction, an absolute waste of the other useful constituents of the Cinchonas at a time when the source of supply is becoming precarious and in danger of exhaustion. If physicians would limit the use of quinia to its legitimate sphere, and apply Cinchonas to their much more extended legitimate sphere, there would be an important economy in results, in cost, and in the future prospects of this important drug. There are but two very good arguments against a very large reduction in the use of sulphate of quinia as a tonic. The most important of these is that Cinchona barks of similar appearance are very variable in quality and often worthless, while the tests of value have not been considered of easy application. The other is the smallness of compass, and greater convenience of administration in the use of sulphate of quinia. To these, and to fashion, which is cultivated by chemists as well as by milliners, is the use of sulphate of quinia as a simple tonic, mainly attributable. It may be easy to rail at fashions in medicine, but when based upon avarice and want of knowledge they are about as little likely to yield as fashions in dress which are based upon frivolity and ostentation.

In these days of medicine-made-easy it would be very difficult to convince many patients, or their pliant medical attendants either, that a bitter dose of any preparation of Cinchona was better than a sugar-coated quinia pill, and therefore, except by setting acknowledged and established truths in front of bad practices, the writer does not propose to attack these evils here.

The first and most important argument against the use of Cinchonas as tonics, namely, the variable quality of the barks as met with in the markets, is however entirely within the domain of practical pharmacy, and it is a prominent object of this paper to suggest a means by which the force of this argument may be diminished.

The varieties of Cinchonas to be considered here are those technically known as "Red" and "Yellow," and it is well known that both these can be purchased in the common market at

prices varying from 40 cents to $2.50 per pound, while other qualities, said to be met with in European markets at about three and four dollars per pound, are not seen here at all, though we are so much nearer to the source of supply. The appearance of all these grades, especially when in the common condition of a well made powder, is so much alike, and so liable to be deceptive, that the observations and experience of many years directed to them with much interest and attention, has taught the writer that he knows nothing about Cinchona barks by the appearance, and that for him at least, there is no safety short of the actual separation and weighing of the impure alkaloids which a well-selected sample may contain. The published processes of assay are numerous, and not very troublesome or difficult, and are scattered throughout the literature of chemistry and pharmacy for many years past. Most of these processes are reliable enough, and practically it is a matter of indifference which of those that are best known is adopted, provided it be afterward adhered to, in order to realize or utilize the education to it which can only be obtained by repetition. An imperfect process, well practised, is often better than any change, and as the same process, if systematically followed, always involves about the same errors and losses, its results, when compared among themselves, must always be more reliable than where different processes are adopted at different times. The process adopted by the writer, and now a good deal used, is that of Dr. F. L. Winckler, published in the Year-book of Practical Pharmacy for 1852, and republished in the "Amer. Journ. of Pharmacy" for 1853, page 339, and abridged in the U. S. Dispensatory, 12th edition, page 295. It is plain, simple, consistent and easy of application, and sufficiently accurate for practical purposes, when well learned, even in hands so moderately skilled as those of the writer. But all these processes aim at an accuracy and precision but little adapted to ordinary pharmacy, and not at all necessary in valuing Cinchonas within the limits of great practical utility. Beside this they involve apparatus, dexterity, and often chemicals, as well as knowledge not usually possessed by the practical pharmacist, and for these, among other reasons, have been but little used where most needed, namely, in the drug market. A consider-

able experience with Winckler's process, and a number of experiments made for the purpose, have led the writer to slight modifications in the detail and practice of it, which, without much injury to its great utility, place it within the sphere of application in every pharmaceutical establishment. By this adaptation its accuracy is impaired, of course, and the first few trials with it are not reliable without confirmation; but after a very little practice it becomes familiar and easy, and the results uniform, while it costs very little in either money, labor or skill. The most that it does require is time and patience; and these, which we so unwillingly give to anything in these days, are absolutely indispensable here, and if these be not accessible the assays had better not be attempted in this way, for they cannot be honestly made.

The apparatus necessary for the convenient performance of the process is a scale that will turn with half a grain, or even a grain, and a set of weights that agree pretty well among themselves; a graduated measure, divided down to a fluidrachm; two capsules or evaporating dishes, having the capacities of about a pint and four fluidounces; a 5-inch funnel; two pint flasks, fitted with corks, and one of them marked at about 12 fluidounces by a scratch or by pasting on a piece of paper; and two or three little beakers of say four fluidounces capacity, with stirrers. The materials necessary are about 1½ pints of common alcohol; 250 grains each of powdered animal charcoal or bone black, and fresh-slaked lime; half a fluidounce of diluted sulphuric acid, one part acid to nine parts of water by measure; a half a fluidounce of aqua ammonia, diluted with an ounce and a half of water; and three or four each of five-inch and three-inch round filters of common gray paper. No item of this apparatus or material is required of any special accuracy or purity, and every one of them may be found in any ordinary pharmacy or dispensary, of proper sizes and qualities, near to those as mentioned. A small spatula or two, some paper and some water, complete this simple list of all that is necessary except a water bath, which may be easily extemporized from any common source of heat. The Cinchona must always be in powder, and the finer the better, the ordinary powders of the market being just right. Pieces of bark

should not be picked out, or even taken at random, for this assay, since it is so difficult if not impossible to get a fair average of a larger lot in that way. But rather the quantity required for the stock of the pharmacist should be bought subject to approval, or subject to a verification of the statements made as to quality by the seller of it, and then if unpowdered the whole should be powdered and sifted together, and a portion of the well mixed powder be then taken for the assay. One thousand grains of the powder is weighed upon a counterbalanced paper, and poured into the largest dish, and enough alcohol stirred into it to wet it thoroughly and uniformly into a smooth even magma of almost a semifluid consistence. It should hardly be thin enough to pour, but just thick enough to be transferred with the end of a spatula, without running off or dripping. If the powder be very fine and dense 2½ fluidounces of alcohol will be sufficient. If a little coarser, or lighter, as is commonly the case with true good Calisaya, 3 fluidounces will be required. Then place the funnel in the marked flask, and fold two three-inch round filters into quarters, in the usual way, by twice doubling down the sheet. When a filter, so folded in the common way, is placed in a funnel for the reception of the substance, there are three thicknesses of the paper against one side of the funnel, and but a single thickness against the other, and then as the porous paper is the only channel through which the liquid can reach the receptacle below, it follows that the three thicknesses of paper will filter much more rapidly, or, under some other circumstances, much less rapidly, than the one thickness. Such inequality in the two sides is not well adapted to percolation; nor should a ribbed funnel ever be used for percolation, nor a smooth one for simple filtration, if it can be avoided. To compensate this inequality of sides in this process, let the one little folded filter be placed inside of the other, with the three-thickness side of one applied to the single-thickness side of the other, and when they are then placed in the funnel there will be four thicknesses of paper applied to the funnel all round, thus giving a uniform direction to the passage of liquid under a uniform pressure from within. Such details are often of more importance than they appear to be, and are easily learned. When the little filters are thus pro-

perly adjusted, transfer the bark magma to the funnel with the end of a spatula, depositing the first portions very carefully within the little filters, so that these may be pressed uniformly out against the glass. Each successive portion should be placed in the centre, so as to maintain a conical pile of the magma, which tends to press equably downward and outward. When the funnel is filled above the edge of the filters less care is necessary, and the remainder may be transferred more rapidly. When the entire contents of the basin are thus collected in the funnel a little tapping on the surface with the spatula serves to level it down, and the funnel, when of the size indicated, is found about half full. The portions adhering to the spatula having been brushed off into the funnel, a four-inch round filter is cut in toward its centre for about a quarter of an inch, at intervals of a quarter of an inch or so, all round the edge, by means of a scissors, and then laid with some care upon the magma, and gently pressed into accurate contact over the whole surface. The cutting round the edge enables the edge to apply itself smoothly to the funnel above the surface of the magma, and a shallow porous cup is thus formed for the reception and equable distribution of the menstruum. The funnel is then filled half way up to the edge with alcohol, and covered with a round filter or piece of flat paper, a little larger than the funnel, and is set away out of reach of accident. The dropping commences at once, at a rate at first proportionate to the quantity of alcohol used in wetting the powder, but if properly arranged as described, it soon settles down to a rate of from 4 to 6 drops per minute, and thus continues to the end. The slower the percolation the better will be the exhaustion by any given measure of menstruum; and as the exhaustion of the bark is the prime object and the most difficult part of the whole process, a slow percolation must be attained in order for any practical degree of success. Under the prescribed management this part of the process will take care of itself, and ensure its own success; for it will be found impossible to hasten it if the powder be fine, and therefore all that is necessary for the operator is to replenish the menstruum in the funnel once or twice in each 24 hours, and patiently wait for the proper result. Even this attention to re-

plenish the supply of menstruum may be conveniently saved by placing 8 or 10 fluidounces of the alcohol in a vial and fitting the vial with a cork perforated with a glass tube two or three inches long and not less than a quarter of an inch in diameter, and broken off obliquely or raggedly at the outer end. This vial and tube held inverted over the funnel, in any convenient way, with the end of the tube about a quarter of an inch above the paper, will supply the little percolator so long as it contains any alcohol, and may be relied upon to keep the surface always covered with a stratum of the menstruum, a matter of some importance to the successful exhaustion. This percolation takes the place of the repeated boilings and strainings of Winckler's process, and is much less troublesome, involves less loss, and requires far less skill and dexterity, while it is quite as effectual and requires less menstruum but far more time and patience. Two entire days is generally necessary to obtain the 12 fluidounces of percolate, which secures the practical exhaustion of the bark. If this quantity should be obtained in less than 24 hours the exhaustion is scarcely to be relied upon, and the results will proportionately undervalue the bark. If the percolation be continued farther than the prescribed quantity the percolate in the case of Red Cinchona will be as dark as new port wine, and from Yellow Cinchona as dark as dark brandy, and both will be very bitter, yet if subjected to a careful accurate process, they yield a proportion of alkaloids which increases the results but one or two tenths of a per cent., an accuracy not aimed at, and hardly useful in such a process as this. When the 12 fluidounces shall have been received within not less than 24 hours' time, let the funnel be removed and the exhausted bark be thrown away. Then add to the 12 fluidounces of percolate in the flask 2 fluidounces of water, and shake the contents together. The powdered Cinchona is more easily percolated and better exhausted by alcohol (s. g. ·835), but the reactions of the next step of the process occur more quickly and more certainly and more accurately when the alcoholic percolate is a little diluted: hence this addition of water before the animal charcoal and lime. It it be Red Cinchona that is under examination, add to the percolate in the flask 250 grains each of powdered bone black (crude) and slaked

lime, previously rubbed together in a mortar; fit the cork into its place, and shake the mixture well. If it be Yellow Cinchona, somewhat less of this mixture will be required, but as a surplus is not hurtful the quantity may be the same for either. Common sugar-refiners' bone black in powder answers a good purpose, and the fresher it is the better. The lime should be recently slaked and well hydrated. Eight parts clean lump lime and five parts water are good proportions for slaking, and give a damp powder. This mixture of bone black and lime may be introduced into the flask when the percolation is about half accomplished, if it can be done with such dexterity as to avoid loss or risk. This saves some time, but had better not be undertaken by the inexpert. If so introduced, it should be shaken round with the percolate so as not to fall to the bottom and lie there in a mass to become hard and unmanageable. The mixture in the flask is to be well and frequently shaken during one or two days, and the oftener the better until on settling the clear liquid above appears to be of a sherry wine color. For the first 12 or 24 hours the mixture remains thick and muddy looking; after that the sediment settles out between the shakings and the upper stratum is seen to become less colored the longer it is shaken together, but the writer has never seen it become perfectly decolorized as described by Winckler. When of a sherry wine color that is quite sufficient for all practical purposes. A five-inch filter is then folded, wetted with alcohol and placed in the funnel, and the funnel placed in the other of the two flasks. The upper clear portion of the mixture is then first passed through this filter, and then the sediment is poured upon it, taking care never to fill the filter more than about two-thirds full until the last portion is poured in, and then not above three-fourths. When the clear liquid shall have pretty well drained off from the sediment, pour on to this latter about 1 fluidounce of alcohol, to displace the liquid still held. Then with the point of a small spatula remove as much of the sediment from the filter as is easily practicable without breaking or injuring the filter, and return it to the flask whence it came. Then add to it 2 fluidounces of alcohol, shake it vigorously for some minutes, and return it to the filter in the funnel with the same precautions as

before. When again drained pour upon it 2 fluidounces of alcohol, half a fluidounce at a time, and then wait until it has ceased to drop into the flask.

The whole of the alkaloids of the Cinchona, within practically useful limits, are now in solution in this alcohol, and the alcohol, having performed its office, is now in the way. It may be evaporated off in the basin in a water bath, or it may be recovered and saved for future use by adapting a perforated cork and tube to the flask, and connecting the tube by India-rubber tubing with any regular or extemporized condensing apparatus, and then immersing the flask in the water bath. By far the most simple way for inexperienced persons, or those whose attention has to be divided by other occupations, is to waste the alcohol by evaporation in the basin by a water bath, avoiding any violent boiling by which portions of the liquid may be thrown out and lost. When evaporated down to about 1 fluidounce, or until the odor of alcohol is no longer discernable, and the water of the bath boiling, add first 2 fluidounces of water and then half a fluidounce of a previously made mixture of half a fluidrachm of sulphuric acid with half a fluidounce of water. Before this addition the basin will contain a milky liquid, with separated resinous-looking particles floating around or adherent to the basin around the edges of the milky liquid, of a soft consistence while the liquid is hot, but becoming first tough and then resinous if the liquid be allowed to cool. This is a mixture of the fused alkaloids with fatty matter, etc. When the diluted acid is added the liquid at once becomes clear and transparent, of a pale sherry color, and fluorescent. The whole must now be heated and stirred with a glass rod until the resinous masses are thoroughly dissolved or disintegrated and nothing but insoluble residue, mostly flocculent, is to be seen, and this floating lightly through the liquid or adherent as greasy matter to the basin. The basin is then removed from the bath or lamp and allowed to become perfectly cold, in order to facilitate the separation of the fatty matter, etc. A four-inch round filter is then moistened with water and adjusted in the funnel, and the solution of the sulphate of the mixed alkaloids is filtered through into a 4 or 6 fluidounce beaker. When all the solution has

passed, the basin is to be rinsed twice, each time with water enough to fill up the filter, the first being allowed to run through before the second is poured into the filter. Next, let a mixture of half a fluidounce of aqua ammonia with one and a half fluidounces of water be made, and add of this mixture gradually, little by little, and with constant stirring, to the filtered solution in the beaker. At first the curdy precipitate formed will be redissolved almost as fast as formed, showing an excess of acid, and when the precipitate becomes permanent the diluted ammonia should be added more slowly and more cautiously and at longer intervals, until the contents of the beaker, after thorough stirring and with the vessel containing the ammonia setting far off, smell very faintly of ammonia. The precipitate may now be allowed to settle until a stratum of clear liquid is formed on the top, and a drop or two of the diluted ammonia be dropped into it. This will show that the precipitation is complete or otherwise; and if complete the next step of the process may be undertaken. It is better, however, to cover the beaker and let it stand for a few hours, or over night, to secure a more thorough precipitation of the minute portions of solution that are caught and enveloped in the curdy precipitate, and which are gradually squeezed out by a contraction of the precipitate. A 5-inch round filter is to be carefully weighed, and the weight marked upon it with a pencil, wetted and adjusted in the funnel, and the solution and floating precipitate gradually poured into it, until all the precipitate is on the filter, and most of the solution drained through. Rinse the beaker with water, scratching off all the precipitate from the sides as clean as is easily practicable, and pour the rinsings upon the precipitate in the filter. Repeat this a second time and then allow the precipitate to drain and contract if it will. Then carefully remove the filter and contents from the funnel, and spread the filter out by unfolding it upon a folded newspaper or other bibulous paper. When the filter is unfolded by commencing with the empty folds, the precipitate will retain the conical form of the funnel. Let this be carefully broken up into small fragments, without loss, and spread over the open filter. The several folds of bibulous paper beneath the filter soon absorb a large portion of the liquid from the precipi-

tate, and this may then be broken up still finer. It is then dried perfectly, first by exposure for 12 hours at ordinary temperatures, and then by placing the whole, bibulous paper and all, in some warm place, with free circulation of air, but protected from dust and accidental loss, for 12 hours more. If the temperature be too high the alkaloids will melt and contract, and adhere to the paper, but this does not affect the result if they have been so spread over the filter as to prevent the formation of masses which might retain moisture within them. At the end of the 24 hours' drying take up two sides of the filter so that the precipitate may fall toward the centre, if it moves on the paper, and place the filter and contents on the scale. Weigh the whole carefully, and subtract the weight of the filter. The remainder is of course the weight of the impure mixed alkaloids from the 1000 grains of powdered Cinchona. If the Cinchona be of good quality this quantity should yield from 28 to 30 grains. If of very good quality from 31 to 34 or 35 grains, and this weight is converted into per centage by simply placing a decimal point immediately to the right of the first or left hand figure. Thus, if 1000 grains of Cinchona yield 31 grains of impure mixed alkaloids, this is equal to 3·1 per cent. If it yield 31·6 grains this is equal to 3·16 per cent. in the Cinchona, and the results may then be applied to any larger quantity by simple arithmetic. These mixed alkaloids are commonly of a dark cream color when dry, unless contraction or fusion has occurred, when they are still darker, and they are quite impure, so that the valuation obtained by weighing them is too high by say about 10 per cent. of their weight. For example, a Cinchona which yields 34 grains, or 3·4 per cent. of its weight of these impure mixed alkaloids, does not yield more than 3·4 less 0·34 equal 3·06 per cent. of pure mixed alkaloids. This, of course, is only a rough practical estimation, but still very useful, until we all learn to be more skilful and accurate. In order to show the want of anything like absolute accuracy in this process it is only necessary to add a few drops of the diluted ammonia to the clear liquor filtered off from the precipitate. In nine cases out of ten this will cause a very decided milkiness and precipitation, indicating the presence of alkaloids. This is in consequence of the small

quantities of the original solution caught and enveloped by the curdy precipitate, and thus protected from the action of the ammonia until it is squeezed out by contraction of the precipitate. The quantity which escapes the weighing in this way is, however, very small, and may be safely disregarded rather than complicate a process which if useful at all can only be so by its general applicability.

The above details may appear ostentatious and prolix on the one hand, or triflingly minute and unnecessary on the other; but in the experience and judgment of the writer they are quite as indispensable to success as the principles involved in the chemistry of the process; and as they are known, by much experience, to be very useful in practice, and earnestly believed to be very much needed to control the markets in the interest of medical science and art, it has been attempted to give them in such detail that any person of ordinary intelligence can take the description and step by step apply the simple process. If pharmacists would but educate themselves to the application of such tests in the same proportion as they do to become good salesmen, they would elevate their profession above the rank of common trade, and be themselves elevated in knowledge and truth and all the influence that flows therefrom.

It is a very great satisfaction to be assured of the quality of a lot of Cinchona by an actual examination, since all the preparations into which it afterwards enters must partake of its assured quality, and fortunately thus far there is no difficulty in obtaining either Red or Calisaya barks of fair quality, if the proper sources be applied to, the proper prices be paid, and the proper tests be applied. It may not always be easy to get Cinchonas yielding 3 per cent., for such are comparatively rare and require much care and discrimination to keep up a stock. But those containing 2 per cent. are always easily accessible in all the principal markets, and the Pharmacopœia, with characteristic liberality and concession toward trade, prescribes 2 per cent. as the lowest grade admissible for officinal yellow and red Cinchonas. It was a good step in the proper direction to establish a standard, but the condition of the markets and the unsatisfactory results obtained from preparations of Cinchona by physicians leads to the inference that the standard is not generally applied.

Of course the first requisite to any preparation of Cinchona is that it be made from good bark, and therefore some reliable process of testing must belong to and preside over all the successful pharmacy, as well as the successful administration of the drug in its various forms. In considering its pharmaceutical management, therefore, good Cinchonas, known to be not below the low officinal limit, should always be understood.

The officinal preparations of Cinchona are all well known, and of undoubted efficacy when made from standard materials, and yet it can hardly be doubted that some of the more recent ones may be usefully improved, if not others usefully added. The officinal fluid extract is a thick, muddy-looking, unsightly, inconvenient preparation, almost unmanageable in making and dispensing, when accurately made from good Cinchona, and it is mainly with the object of improving this preparation that this paper has been undertaken. Three prominent points in its formula are considered of doubtful utility, if not objectionable, and it has been thought well worth while to investigate the subject. The first point of objection is to the use of Diluted Alcohol as a menstruum, and the excessive quantity of menstruum used. The second point is the use of sugar as a preservative; and the third, which flows as a necessity from the first two, is the making a minim of the finished product represent half a grain rather than a grain of the Cinchona used.

Why Diluted Alcohol is universally used in all the preparations of Cinchona (except the extract, wherein alcohol is followed with water) does not appear in the writer's research into the chemistry and pharmacy of the subject. It undoubtedly exhausts the Cinchona with ease and celerity, the menstruum soon coming through with comparatively little color and bitterness, and this circumstance seems to have been universally accepted as evidence that it is the proper menstruum. Authorities seem to have followed each other in adopting it with such unanimity that to propose a change at this late day in the management of a drug so well known and studied involves a responsibitity not to be lightly assumed. This point has therefore been made the subject of careful observation and experiment.

The use of sugar as a preservative agent to the medicinal properties of Cinchona is modern, and became officinal in the present fluid extract. Though it does not hold all the matter extracted by Diluted Alcohol in a perfect solution, yet it suspends and preserves them well, and replaces a portion of the alcohol which would be required without it. It has been supposed that the stimulant effects of alcohol were objectionable in this preparation, and this appears to have been the main reason for using sugar. Nothing, however, is now more common, or apparently more useful, in the use of bitter tonics, and particularly with preparations of Cinchona, than their judicious association with stimulants, and hence this argument for the use of sugar will no longer be generally accepted, whilst its addition to the officinal fluid extract is the chief reason why the preparation cannot be made to conform to the general rule of strength for the fluid extracts, namely, a minim for each grain of the drug represented. This exception to the rule in the case of Cinchona, where the dose in substance is so large, and has to be doubled when the fluid extract is used, is a serious objection to the formula, and quite at variance with the general argument in favor of fluid extracts. If, then, by changing the menstruum and the preservative agent the consistence, permanence, appearance and effect can be improved, and the volume reduced one-half, and brought to conform to the general rule, such change would doubtless be judicious and generally acceptable.

In a report to the Amer. Pharm. Assoc., by Mr. Alfred B. Taylor, of Philada. (see Proceed. Amer. Pharm. Assoc. 1864, p. 206), Mr. Taylor, who had originated the improved formula for the use of sugar, following Mr. Donovan, of Dublin, and others, made another important step in the progress of improvement by substituting glycerin for both sugar and water, with the result of making an elegant, permanent and efficient preparation, which left little to be desired except a reduction of volume to one-half. This reduction, if made upon Mr. Taylor's fluid extract, would subject it to much additional heating, and yield a product of unmanageable consistence.

(To be continued.)

CARELESSNESS IN THE COLLECTION OF DRUGS.

By J. M. Maisch.

Careful pharmacists will always subject new lots of drugs to the process of garbling. When large quantities of different drugs are dried at the same time in the drying closet or room, or when original packages are kept open side by side in the warehouse of the wholesale dealer, the drugs may become mixed to a slight extent. These chances alone, aside from all possibilities of intentional admixtures, render it incumbent upon the pharmacist to subject each parcel to a rigid examination, and separate all foreign admixtures, as well as all unofficinal parts of officinal plants.

Of late years, the quality of certain drugs has constantly assumed a lower grade. Alexandria senna, which was always more or less mixed with petioles and with leaves which, to a casual observer, might pass for senna, has gradually become adulterated with stalks to such an extent that, by garbling, fully 50 per cent. may be separated, thus enhancing the price of a passable drug to double the amount of the commercial article. While it is possible that some careless or unscrupulous persons may use these impure leaves, the majority of pharmacists probably employ the East Indian or Tinevelly senna, unless the Alexandria variety is particularly ordered.

This is only one instance; but every pharmacist will remember many others. If, in the inspection of the imported drugs at the ports of importation, the United States Pharmacopœia is taken as the guide, it is to be wondered where the drug inspectors find the authority for passing senna leaves containing half of their weight of leaf stalks and branches, or how they can allow genuine Russian rhubarb manufactured in western Europe to enter our ports, after the true drug has been used up for years.

To a considerable extent, these evils arise from the fact that importers will limit the price of drugs when ordering them by letter from foreign countries, and dispensing pharmacists will continue to buy cheap drugs. It is for this reason that in foreign drug markets drugs are frequently considered good enough for the American market, when no apothecary would dare to keep

them in his store, and no wholesale dealer would have the hardihood to offer them to a respectable pharmacist. Valerian with more than its own weight of dirt enclosed between the fibrous roots, belladonna mouldy and black by careless drying and packing, narcotic extracts containing all the chlorophyl and all mucilaginous constituents of the plants, are thus thrown upon us, notwithstanding it is well known that by paying a fair price a fair article may be obtained in these same markets.

Most inferior crude drugs are undoubtedly in such a condition from the utter carelessness in their collection, and this is induced by the low price paid for them; but the inferior preparations are and must be produced designedly, and the fact of a too low price being obtainable only, is no excuse for a conscientious manufacturer. Still, with the drug law faithfully carried out, such worse than worthless trash could not enter from abroad.

It is, however, easy enough to preach against the unreliability and the impurities of some foreign drugs; are we not, to a certain extent at least, drifting in the same direction with our indigenous drugs?

Without intending to intimate that it is the rule, I may state that I have found Veratrum viride with almost 12 per cent. of worthless stalks attached (see Am. Journ. Ph., 1864, 99); the roots are always attached to it, although they are at least inferior to the corm, if not actually worthless. Seneka, and particularly spigelia, may be seen with several inches of the over-ground stem attached to it; elder flowers consist in the smallest proportion of the flowers,—the cymes are collected with as much of the peduncles as possible; in the same manner, instead of the fruit alone, the commercial so-called (wild) carrot seeds consist of the entire umbels.

And where the leaves are officinal or the herb is ordered, it is usual to collect the *whole* herb, cut off near the ground, without regard to the inefficiency of the older portions of the stems. When the pharmacopœia orders the leaves of Salvia officinalis, it did not intend to have from 12 to 25 per cent. of stems mixed with them. Although directing the herb of Mentha piperita and other plants (the leaves and flowers are the true aromatic portions), the stout, tasteless stem was certainly not designed; the

herb of Lobelia inflata does not include the root; and when Epigæa repens is wanted, notwithstanding it is not officinal, the astringent leaves only are intended, and not likewise the creeping woody stems, which are destitute of astringency.

Nor is this all; occasionally plants or parts of plants are brought into the market under entirely wrong names. Most readers are undoubtedly familiar with the interesting discussion on saffron at the meeting of the American Pharmaceutical Association in Boston, in 1865, when safflower (carthamus) was exhibited under the name of saffron. I have lately repeatedly seen what was announced as marigold, Calendula officinalis, and proved to be Tagetes erecta, the so-called African marigold. The florets of calendula are used chiefly on account of their bright yellow color, and it is not improbable but the florets of Tagetes may be used for the same purpose; but then they alone ought to be collected, without the involucre, receptacle and fruit, and, more than that, they ought to be sold under their proper name.

Our indigenous materia medica is undoubtedly scarcely explored; there may be many plants which are hardly known as remedial agents, and the future will necessarily bring to light many which as yet have attracted no attention. To create and keep up confidence in these drugs, it is indispensably necessary that sufficient care should be bestowed upon their collection and preparation for the market. To point out some of the faults in the drug gathering of our country, with the view of correcting the same, has been the object of this paper; and the writer feels assured that every conscientious pharmacist will agree with him that, even at the risk of increasing their price, it is far better that they should be collected and prepared correctly at once, than that he should devote so much of his valuable time to garbling them so as to fit them for their medicinal uses.

FERRATED ELIXIR OF GENTIAN.

By William B. Thompson.

A new tonic, under the above title, is being considerably prescribed at present. It is claimed that more decided effect is de-

rived from this combination than by the employment singly of its components. In the absence of any officinal or general recipe, I have devised the following, which has met with approval. Take of

Fluid Extract of Gentian,	2 fluidounces.
Curaçoa,	6 "
Boiling Water,	2 "
Sherry Wine,	Sufficient quantity.
Pyrophosphate of Iron,	256 grains.

The iron salt is to be dissolved in the boiling water, to which solution add the fluid extract of gentian and curaçoa, and finally sufficient sherry wine to make the whole measure one pint. The result is a bright, clear solution, decidedly bitter, yet palatable and agreeable, containing in each fluidrachm the proper dose—two grains of pyrophosphate of iron.

Gentian, from the fact that it does not contain tannin, is an eligible bitter for combination with iron; and the idea here suggests itself whether such a preparation is not after all more satisfactory as a tonic than those uncertain compounds of iron and cinchona barks vended under the names of "Bitter Wines," "Elixirs," and "Ferrated Elixirs," which are for the most part only flavored *inks*.

Philada., May 12, 1867.

NOTES ON SPANISH SAFFRON (*CROCUS SATIVUS*).

By Henry Biroth.

Read before the Chicago College of Pharmacy April 17, 1867.

From some remarks on Saffron at one of our meetings I have been induced to test its value in regard to purity. I had three samples to dispose of—one from a New York importing house, the others from two Chicago wholesale houses. I was astonished to find them all extensively adulterated.

In 100 parts of sample No. 1 found only 55 parts genuine Saffron,
in " No. 2 " 37 "
in " No. 3 " 42 "

The rest were all colored flowers, mostly of Calendula officinalis. It is no wonder that saffron *is* adulterated; it shares the fate of

most of our costly imported drugs, such as opium, musk, the essential oils, &c. No doubt that there is good saffron in the market, but it is very scarce. The test is very simple and interesting. Put a few pieces of it on a glass-plate, and touch them with concentrated sulphuric acid; the real stigmas assume a beautiful indigo-blue color, while the adulterations remain unchanged. Having experimented in this manner for a little while, you will get so well acquainted with the genuine saffron that you can readily separate it from the adulterations with the pincers.

In speaking of the Tinctura aloes et myrrhæ the U. S. Dispensatory says: "The saffron, which has been retained in compliance with former prejudices, can add little to the efficacy of the preparation, and being very expensive has with great propriety been much reduced in the U. S. formula." Under the head of saffron it again says: "At present the chief use of the saffron is to impart flavor and color to officinal tinctures." This is decisive to us. Now let me ask you why the Pharmacopœia wishes to impose upon us a drug so costly and so much adulterated, merely for the purpose of flavoring and coloring three or four tinctures? Do these tinctures need a *coloring* substance, being too light without it? or is it necessary that they should be *flavored?* No; they are sufficiently *colored* and sufficiently *aromatic* without saffron. We must seek for another cause. Saffron had been extensively used in olden times, and especially by the alchemists, who attributed properties to it which were nearer to superstition than to reality. The passion for gold, the mania for search for the philosopher's stone, the alkahest and the great elixir, or the red tincture, induced them to try almost everything. No wonder that saffron, whose tincture shows such a beautiful golden-yellow color, had to play its part in that drama of the development of alchemistry. Some of these old preparations which contained saffron are in use still in our Pharmacopœias, though greatly changed, of course. The first and most prominent of these is the great pharmaceutical and medical monstrum *Theriaca*, now Confectio opii, that will soon celebrate its 2000th birthday, Mithridate of Pontus, 88 B. C., being its inventor; it originally consisted of over a hundred different drugs, was always prepared in the City Hall, with imposing ceremonies, under the protection of the municipal authorities, and was regarded as

a panacea for all diseases, internally and externally. Then the *Elixirium sacrum*, now Tinctura rhei et aloes; the *Hiera Picra*; the *Elixirium Paregoricum* of Am. Disp., 1820; the *Linimentum saponis camphoratum*, according to Gray's Supplement of London Pharmacop.; the *Laudanum*, of London Pharm., 1720; *Sydenham's Tincture of Opium*, genuine formula; the *Vinum Rhei*, according to Gray's Suppl.; the *Tinctura Rhei*, of London Pharm., 1788. All these preparations originally contained saffron, which in course of time was left out, as the formulæ were changed more and more. Others retained the saffron, as our *Tinctura Aloes et Myrrhæ*, or the old Elixirium proprietatis Paracelsi; *Pilulæ Aloes et Myrrhæ*, or Rufus' Pills; *Tinctura cinchonæ co.*, or Huxham's Elixir; *Acetum Opii*, or Quakers' Black Drops. But even with these it is only a matter of time. Such therapeutists as Alexander, Orfila and Murray have proved by experiments that Crocus has but little activity, and the U. S. Dispensatory itself does not consider it a medicinal agent in its preparations. To-day it is but a mistaken reverence for ancient formulæ, a fear of lifting the veil of mysticism. I do not mean to say that we shall not respect the Pharmacopœia, or that we shall do as we please, or as we individually think more proper; on the contrary, the Pharmacopœia shall and must be our rule, our guide in pharmaceutical business, and we must adhere to it in our preparations until a change is made. And here allow me to testify my high appreciation of the principles inculcated in the excellent essay of Mr. Mill, our Secretary, published in the Proceed. Am. Ph. Ass. 1865, in which he recommends the utmost *fidelity* to our national Pharmacopœia. It is an essay full of ideas which every young pharmacist in particular should observe and study. But, on the other hand, the right of criticism, this solemn right must not be denied to us, especially in regard to the Pharmacopœia. Each member should feel himself obliged to speak frankly about everything concerning the pharmaceutical business. *Disputando discitur.*

NOTE ON CHEAP GLYCERIN.

By J. M. Maisch.

After my paper "on tests for the purity of glycerin" had appeared in the March number, several friends called my atten-

tion to different kinds of cheap glycerin in our market, of which heretofore I had no knowledge,—namely, to an article sold by wholesale dealers under the name of "concentrated glycerin," and which I am informed is manufactured in this city; to an article said to be made by Merck, of Darmstadt; and to an article of English origin, manufacturer's name not given. Of the former two I received specimens; the last I have never seen, but, if my information is correct, it is not better than the former, while it is held at a higher price than the "concentrated."

The two specimens were tested in a similar manner, as described in my former paper, and were found unadulterated.

Litmus, alcohol, ferrocyanide of potassium, acetate of lead and chloride of calcium had no effect; sulphuric acid yielded a clear mixture, gradually assuming a yellowish tint; oxalate of soda rendered them slightly turbid; nitrate of baryta produced a turbidity with Merck's, none with the "concentrated;" nitrate of silver produced a milkiness in the former, a slight turbidity in the latter; on heating to the boiling point they both turned brown. The specific gravity of Merck's was 1·247; of the concentrated, 1·251.

The Vienna glycerin had been kept alongside of these specimens for about three months; it has acquired a decided rancid odor. A specimen which had been kept by a friend, part of the time exposed to the sun, had a much stronger odor. Merck's had acquired a similar odor, though not quite as strong. The "concentrated" has a peculiar, slight, not a rancid odor, which during that time has not increased, but rather seems fainter.

I do not regard these pure enough for internal use; they may answer for some external preparations, however, where low price is a consideration. On that account, and for the absence of the *rancid* odor, I think the concentrated to be preferable, which is likewise less contaminated with saline compounds.

I may state yet that, when diluted with distilled water and kept for two or three months, Bowers' inodorous glycerin remained perfectly limpid, while the Vienna and Western glycerin produced, in the course of two or three months, a quantity of confervæ. This may probably be another test, not so much for the *absolute* purity, but rather for the presence or absence of those odorous organic compounds.

ON IODINIZED SYRUP AND ELIXIR OF HORSE-RADISH.

MR. EDITOR:

Dear Sir,—After reading over your editorial in the American Journal of Pharmacy, January, 1867, I feel somewhat encouraged to forward to you, for publication, the two following formulas, "no matter how meagre or unscientific they may appear," hoping a few of your readers may find some interest in them.

The first formula, "iodinised syrup of horse-radish," much like the "sirop de Raifort composé" of the French codex, differs from it by an addition of iodine, which increases the alterative properties of this very popular remedy.

The second formula, "elixir of horse-radish, &c.," is a modification of the first one, under another form, and with the addition of pyrophosphate of iron.

These two preparations are much prescribed here by physicians who are aware of their composition. This, together with my dislike of selling secret medicines of my own, and my desire to be agreeable—useful, if possible—to members of the medical and pharmaceutical profession, have prompted me to publish these formulas.

Yours, very respectfully,

E. FOUGERA.

New York, June 12, 1867.

Iodinised Syrup of Horse-radish.

After the formula of N. Lancelot, Phar. lauréat of Paris.

1st. Fresh scurvy grass,
Fresh water cress, *aa* 10 kilo.,
Orange peels, 2 "
Cinnamon buds, 0·500 kilo.,
White wine, 40 litres.

Contuse the substances, macerate 48 hours, then distil in water bath to obtain 10 litres.

2d. Fresh horse-radish, 10 kilog., White sugar, 20 kilog.

Cut the horse-radish by slices, contuse it with the sugar, dissolve without heat the saccharated magma in water q. s., add the 10 litres product of the above distillation, and press the whole through linen, so as to obtain a total volume of 32 litres.

3d. Simple syrup, 33 litres, Iodine, in powder, 420 gram.

Divide the syrup and iodine in several glass-stoppered bottles,

expose to a moderate heat in water bath, shaking occasionally, till the syrup, from a red brownish color, has passed to a white one.

Mix this syrup with the above 32 litres, and pass through flannel, so as to obtain, in all, 65 litres.

Dose for adults a tablespoonful; for children a dessert or a teaspoonful, always three times a day, at meal hours.

Each tablespoonful contains of iodine two grains.

Iodo-ferro-phosphated Elixir of Horse-radish.

N. B.—This Elixir is to be kept in a dark place, as it is altered by the light.

1st. Fresh scurvy grass,		Cinnamon buds,	0·100 kilog.,
Fresh water cress, *aa*,	10 kilog.,	Cardamom,	0·100 "
Orange peels,	0·500 "	Mace,	0·100 "
Angelica root,	0·200 "	White wine,	40 litres.

Proceed as before in foregoing formula, under No. 1, to obtain also 10 litres.

2d. Fresh horse-radish, 10 kilog., White sugar, 20 kilog.

Operate as in first formula under No. 2, also to obtain 32 litres.

3d. Simple syrup, 10 lit., Iodine, in powder, 420 gram.

Expose to a moderate heat, as in first formula, under No. 3.

4th. Water, 17 lit., Pyrophosphate of iron, 840 grm.

Dissolve by heat.

5th. Inodorous alcohol 95°, 6 lit.

Mix all the liquids together, and filter so as to obtain in all 65 litres. Same doses as for the iodinised syrup of horse-radish.

Each tablespoonful contains of iodine 2 grains, of pyrophosphate of iron 4 grains.

PHARMACOPŒA HELVETICA. SCAPHUSIÆ EX OFFICINA BRODTMANNIANA, Chr. Fr. Stoetzner; 1865.

(Continued from page 212.)

Auro-natrium chloratum is made in the usual way, from 6 parts pure gold and 10 chloride of sodium.

Bismuthum nitricum. The metal is first freed from arsenic by

fusing a mixture of 64 bismuth in powder, 3 carbonate of soda, and 7 sulphur. The purified metal is dissolved in nitric acid, the solution diluted with water, filtered through gun cotton and crystallized. The crystals are first triturated with 4 parts, and then mixed with 25 parts distilled water.

It was, we believe, Duflos who first proposed the preparation of ternitrate because it crystallized free from arsenic; his process was subsequently adopted into most pharmacopœias of continental Europe, and is substantially the above. The test for arsenic can scarcely be considered delicate enough; it consists in precipitating the solution in nitric acid by sulphuretted hydrogen, digesting with sulphuret of ammonium, and treating the filtrate with hydrochloric acid.

Calcium sulfuratum. Equal parts of burned lime and sublimed sulphur are ignited for half an hour in a Hessian crucible.

Chininum sulfuricum is prepared in chemical manufactories, but is tested for its purity by the usual tests.

Chininum purum is quinia precipitated by caustic soda.

Chloroformium is prepared by adding to a mixture of 15 parts chlorinated lime (containing one-fifth active chlorine) and 90 parts hot water, one part alcohol of ·837, as soon as the temperature has reached 70° C. (158° F.) The crude product is washed with water, then treated with sulphuric acid (quantity not given), rectified from a steam bath, and preserved from contact with the light. Spec. grav. 1·49. The total absence of alcohol is proved by the bichromate of potassa test. Litmus, sulphuric acid and nitrate of silver are not affected.

According to our experience on a large scale, this process is objectionable for the large amount of water employed, and the high heat. With some modifications, the process of B. Hirsch (see Am. Journ. Ph. 1862, p. 42) has given us the best results. For purifying crude chloroform, the directions of our pharmacopœia leave little to desire. In regard to the specific gravity, and to the total absence of alcohol, we have expressed our views on another occasion, and reiterate from experience since had, that the addition of sufficient pure alcohol to reduce the gravity to about 1·480, is preferable.

Cuprum sulfuricum ammoniatum is precipitated by alcohol from a solution of sulphate of copper in ammonia.

Ferrum aceticum is an excellent preparation, being the dry salt in a state perfectly soluble in water and alcohol. Peroxide of iron, freshly precipitated by ammonia, is washed with cold water, digested in acetic acid for 6 hours at 40 to 60° C.; after standing over night the clear solution is decanted, *not filtered*, and evaporated at between 60 and 80° C. It contains about half its weight of oxide of iron.

Ferrum carbonicum is a wrong name for the preparation officinal here as Ferri subcarbonas, a name not much more appropriate.

Ferrum carbonicum saccharatum, prepared by drying the protocarbonate obtained from 12 p. sulphate of iron, with 5 p. sugar, contains about one-fourth its weight of iron, and is a very appropriate compound.

Ferrum jodatum contains about double the amount of iodine as the same measure of our syrupus ferri iodidi, but is free from sugar and therefore unstable.

Ferrum jodatûm saccharatum is the dry salt preserved by sugar of milk, in the proportion of 5 parts to one of iodine.

The Pharmacopœia orders also proto- and sesquichloride of iron in crystals, ammonio-citrate, lactate, peroxide, proto-peroxide, phosphate (blue), powder obtained mechanically and by hydrogen, and sulphate of iron.

Glycerinum has only a specific gravity of 1·227 to 1·230; a pale yellowish article, otherwise pure, is allowed.

Corrosive sublimate, calomel (prepared by subliming the former with mercury), white precipitate, iodide and biniodide, oxide and black sulphuret of mercury, correspond with our preparations. Protonitrate of mercury in crystals and solution, and Hahnemann's soluble mercury are likewise officinal, the latter under the incorrect name of hydrargyrum oxydulatum nigrum.

Hydrargyrum depuratum is made by digesting mercury with solution of sesquichloride of iron and washing with water.

Hydrargyrum sulfurato-stibiatum s. Æthiops antimonialis consists of equal parts of the black sulphurets of mercury and antimony.

The preparations of potassium agree with those of our pharmacopœia, except that a pure carbonate is not ordered, but

merely the purified. Bromide and iodide of potassium are made by Frederking's process, thereby avoiding the very tedious washing of the precipitated protocarbonate of iron, rendered necessary by following the process of our pharmacopœia.

The proportion of carbonate of potassa and sulphur in Kalium sulfuratum is 3 : 2.

The preparations of magnesia are all made in chemical manufactories; the solution of the citrate is not officinal.

In Europe, sulphate of morphia is very rarely used; instead of it, the more soluble acetate and muriate are officinal; likewise the pure alkaloid; only the latter is directed to be made by the pharmacist.

All our soda salts, except the sulphite, are officinal. We consider it an unnecessary nicety to prepare the phosphate from phosphoric acid, made of phosphorus.

Plumbum jodatum is still prepared from acetate of lead; by the use of the nitrate, the loss of iodine would be less.

Plumbum tannicum humidum, for external use only, is obtained by precipitating a decoction of oak bark by subacetate of lead.

The preparations of antimony correspond with our officinal ones, except Stibium sulfuratum aurantiacum, golden sulphur, which is very properly made and obtained of uniform composition by the decomposition of Schlippe's double salt with sulphuric acid.

Veratrinum, Strychninum nitricum and purum are made in chemical laboratories.

A great loss of ether and alcohol takes place in the preparation of tannic acid, Tanninum. Eight parts of galls, in coarse powder, are digested with twelve parts ether and three parts alcohol; the operation is repeated, and the filtrate is mixed with one-third volume of water; after separation, the aqueous liquid is evaporated. If the first part of the process of our pharmacopœia is followed, the loss of ether is comparatively little, since a considerable portion may be recovered by distillation.

To obtain cream of tartar, free from lime, Tartarus depuratus is prepared by digesting, for two days, ten parts of powdered bitartrate of potassa with ten of water and one of muriatic acid, and washing with water.

Tartarus boraxatus. Three parts Tartarus depuratus and one

of borax are dissolved in twenty of hot water; the solution is evaporated and the residue powdered.

Tartarus ferratus is our ferri et potassæ tartras. The Swiss pharmacopœia contains a pure and a crude salt; the latter made from crude tartar, and designed chiefly for external use in baths.

In the process for chloride of zinc, our pharmacopœia assumes the presence of iron as an impurity, and uses chalk to separate it, thereby contaminating the preparation with a little chloride of calcium. The metal zinc, however, is directed to be entirely free from iron. The Swiss pharmacopœia uses oxide of zinc and pure muriatic acid, and thereby avoids the contamination and an inconsistency. The acetate and sulphate of zinc are likewise very properly prepared from the oxide.

Zincum cyanatum (not to be confounded with the non-poisonous ferrocyanide) is made by passing hydrocyanic acid into a solution of acetate of zinc. The ferrocyanide is obtained by double decomposition.

Of the valerianates, the zinc salt only is officinal.

(To be continued.)

GLEANINGS FROM GERMAN JOURNALS.

By John M. Maisch.

Diabetes. M. Pettenkofer and C. Voit observed that a patient who secreted, by the urine, in a day, 644 grammes of sugar, exhaled through skin and lungs 795 grammes carbonic acid, and inhaled 792 grammes oxygen, quantities agreeing with those of a healthy adult under ordinary circumstances. But the large quantity of food consumed by the diabetic patient would produce in a healthy man a much larger exhalation of carbonic acid, while the food which is sufficient for the latter would cause with the former a diminished use of oxygen and a diminished separation of carbonic acid—that is to say, he would be like a healthy person suffering from hunger. Pure meat and fat without carbohydrates, used as food, may diminish the secretion of sugar to 300 grammes, but do not cause its disappearance. In this case the sugar must be produced from the fat, and from the fatty body generated by the splitting of the albumen.

The proportion of inhaled oxygen to that contained in the exhaled carbonic acid is in hunger and with the use of meat as food 100 : 75; when using carbohydrates, 100 : 120; in the above observation, 100 : 73. The oxidation of the introduced carbohydrates is therefore impossible. If we assume that the normal number of blood corpuscles possess, in diabetes, to a less degree, the power to resorb oxygen, we are enabled to explain the symptoms of this disease. (Sitzungsberichte d. k. bayer. Akad. d. Wiss., 1865, II., 224—227.

Magnesia citrica solubilis. Dr. Hager analyzed the soluble citrate of magnesia prepared by Menier, of Paris, and found, in 100 parts, 14 parts magnesia and 71 parts crystallized citric acid (equiv. 201). The formula is $2MgO,HO,\overline{Ci}+8aq$. It may be prepared by dissolving five parts crystallized citric acid in ten parts distilled water, and adding one part recently-calcined magnesia, or a corresponding quantity of carbonate, diffused in one part of water; the filtered solution is then evaporated until a pellicle forms, and set aside, when it partly crystallizes and partly congeals. Thrown into water, the crystallized portion dissolves first, afterwards the crystalline crusts. It is important not to use a trace of magnesia in excess, which would form the insoluble neutral citrate, and dispose nearly all the magnesia to separate in this form. Repeated heating appears to have the same effect, and it is advisable to boil the solution, without intermission, to the required point. (Pharm. Centralhalle, 1866, N. 40.)

Preparation of fruit syrups. Mr. Jessler states that the directions for their preparation, contained in the Pharmacopœa Germaniæ are the best, yielding a syrup rich in color, possessing the full flavor of the fruit, and being not liable to become turbid. The bruised fruit is allowed to ferment for two days, in cooler temperature for three or four days, merely to transform the pectin into pectic acid; the juice is now expressed, heated to 80 or 90° C., set aside for several days in the cellar, then filtered. Thirty pounds of the filtered juice are poured over fifty pounds of crushed sugar, heated to boiling in a bright copper kettle, strained, and, while still warm, filled in jugs, which are corked, sealed, and when perfectly cool, repeatedly shaken. The last

drop is as good as if freshly prepared. (Schweiz. Wochenschr. f. Ph., 1866, N. 26.

Preservative against cholera. (See also Amer. Journ. Pharm., 1866, p. 46.) Dr. La Roche, of Kurnik, recommends quinia for this purpose, and states: I believe, that this remedy is of no less value against this disease than vaccination against the small-pox. Adults take, at the approach of the epidemic, twenty-four grains in hourly doses of two grains; afterwards, for three weeks, two grains three times a day, when the dose is diminished to two grains morning and night, and this continued until after the disappearance of cholera. Grown persons may take it in pills, children best in syrup of liquorice root. The regimen must, of course, be a proper one, and the well-known rules for the prevention of cholera must be strictly observed. I also warn earnestly from the repeated use of the so-called cholera bitters, liquors, &c., which are directly deleterious, and increase the disposition to this disease. They are the serpent among flowers. (Ph. Centralhalle, 1866, N. 40.)

Sulphuret of carbon in petroleum. Hager observed it in American petroleum; the portion distilling below 80° C. contains nearly all; the oil obtained above 120° C. is free from it. It may be removed by agitation with mercury, with or without the previous use of sulphuric acid. (Ph. Cent. Halle, 1866, N. 44.)

Protiodide of mercury. Dr. Rieckher proposes to triturate 100 parts biniodide with 44 parts metallic mercury, keeping the mixture moist with a little alcohol, and afterwards washing the product with alcohol, to remove biniodide. It is a dark green powder with a tinge of yellow.* (N. Jahrb. f. Ph., 1866, Jan. 21—24.)

Frederking uses 16 parts mercury, 10 parts sublimed iodine, and two parts alcohol; after the evaporation of the alcohol, he washes the preparation with two parts iodide of potassium in six parts water, then with pure water, and dries at a temperature of 20° C. The preparation is entirely free from biniodide

*This process was recommended by Winkler over twenty years ago, and Prof. F. J. Otto suggested to remove biniodide by alcohol.

and from iodide of potassium, and possesses a yellowish green color. (Pharm. Zeitschr. f. Russl., 1866, 382.)

New marking ink, by E. Jacobsen. No. 1. 8·52 grm. crystallized choride of copper, 10·65 grm. chlorate of soda, and 5.35 grm. chloride of ammonium are dissolved in 60 grm. water.

No. 2. Twenty grammes muriate of aniline dissolved in 30 grm. water, and mixed with 20 grm. mucilage of gum arabic and 10 grm. glycerine. Four parts of No. 2 are mixed, cold, with one part of No. 1, and this mixture is used for marking. The parts marked are held in the vapors of boiling water, which brings out the black color; after which the cloths on the parts marked are washed. (Ph. Zeitung.—N. Jahrb. f. Pharm., 1867, Jan. 46.)

Dusseldorf mustard. Prof. Artus recommends to mix $\frac{2}{3}$ lb each of white and black mustard with $1\frac{1}{2}$ lb hot water, 1 lb wine vinegar, $1\frac{1}{4}$ drachms cinnamon, 2 scruples cloves, $\frac{2}{3}$ lb white sugar, and 1 lb white wine. (Ibid.)

White liquid glue. L. Knaffl macerates three parts glue with eight parts water, adds one-half part muriatic acid and three-fourths part white vitriol, and digests for 12 hours at a temperature of 65 to 70 R. (Ibid., p. 47.)

Extraction of fixed oils. H. Vohl recommends coal oil of ·650 to ·700 spec. gr. for this purpose, which yielded very good products. (Ibid.)

Influence of nascent hydrogen on alkaloids. Professor Rochleder informs the Imperial Academy of Sciences at Vienna that he found that quinia, cinchonia and caffeina, which persistingly withstand the influence of oxidizing agents, are readily attacked by nascent hydrogen. The resulting products will be hereafter described. (Verhandl. d. Kais. Akad. d. Wiss. in Wien, 1867, 2.)

Coffeotannic acid, according to Prof. Hlasiwetz, is a glucoside, splitting, when boiled with alkaline solutions, into a sugar and coffeic acid, which, oxidized by fusing hydrate of potassa, yields acetic and protocatechuic acids. The formula of coffeotannic acid appears to be $C_{30}H_{18}O_{16}$, splitting, by uniting with 2HO, into coffeic acid, $C_{18}H_8O_8$, and mannitan (?) $C_{12}H_{12}O_{10}$. (Ibid, 2, 3.)

Tea yields, according to Hlasiwetz and G. Molin, besides tannin, also gallic acid, oxalic acid and quercetin; the latter probably derived from quercitrin; boheic acid appears not to be a distinct compound. (Ibid., 3.)

Permanganate of potassa. J. C. Sticht employs the materials nearly in the proportion recommended by Woehler. 500 parts freshly prepared solution of potassa, of 45° Beaumé, are evaporated with 105 p. pure chlorate of potassa; 182 parts of black oxide of manganese are gradually added, and the mass rendered anhydrous, when it is allowed to cool, with continued agitation, to obtain it in a coarse powder. This is heated in small iron kettles, of about 3 gallons capacity, to dull redness and semifusion. When cool the mass is removed, broken into small pieces, and heated with water. The red solution is allowed to rest for 12 hours, then drawn into copper kettles and evaporated below the boiling point; when disposed to crystallize on cooling, the fire is withdrawn, and after some time the clear liquid drawn into crystallizing vessels of copper or stone. The crystals are collected in a glass filter, washed with some cold water and dried. The residue in the iron kettle is exhausted with water and crystallized in the same manner. The weakest solution may be used for the next operation. When the liquor assumes a green color it contains manganate of potassa and chloride of potassium, and may be used for the generation of chlorine by the addition of sulphuric acid, or converted into permanganate by passing chlorine through it, when 25 per cent. more of that salt may be obtained. 182 lbs. black oxide of manganese yielded 98 to 100 lbs. permanganate of potassa in long crystals. (Wittst. Vierteljahresschrift, 1866).

Fuchsin as a test for alcohol in volatile oils was recommended by Puscher. H. Zeise finds that fuchsin is dissolved by the freshly distilled oils of bitter almonds, cloves, cinnamon, cinnamon-buds, coriander, allspice, mustard, and white sandal wood; old oil of peppermint and of crisped mint likewise dissolve it. It was however found to be insoluble in the oils of cascarilla, copaiba, cubebs, sassafras, mace, pepper and ginger. (N. Jahrb. f. Ph., 1867, Febr., 81).

ON THE PREPARATION OF SPIRIT OF NITROUS ETHER.

By Theophilus Redwood, Ph.D.,

(Professor of Chemistry and Pharmacy to the Pharmaceutical Society.)

An impure spirituous solution of nitrous ether has been long and extensively used in medicine, under the several names of *Dulcified Acid of Nitre*, *Sweet Spirit of Nitre*, *Spirit of Nitric Ether*, and *Spirit of Nitrous Ether*. It appears to have been first vaguely described as far back as the thirteenth century, by Raymond Lully, but it was more prominently brought into notice by the great champion of chemical medicines, Basil Valentine, about two hundred years later. The process generally adopted for its preparation has consisted in distilling a mixture of nitric acid and spirit; but several modifications of the process have from time to time been made, the proportion of acid in relation to the spirit having been frequently varied, and other alterations effected, with the view of meeting difficulties that have presented themselves, or of obviating objections that have been found to apply to the products obtained.

In 1746 this preparation was first introduced in the London Pharmacopœia under the name of *Spiritus nitri dulcis*, which was changed in 1788 to *Spiritus ætheris nitrosi*, and again in 1809 to *Spiritus ætheris nitrici*.

The process given in the London Pharmacopœia of 1746 consisted in submitting to distillation a mixture of six troy ounces of strong nitric acid, of about 1·5 specific gravity, with thirty-two fluid-ounces of rectified spirit. This process remained unaltered until 1809, when the proportion of nitric acid was reduced to one-half. In 1824 a slight change was made in the quantity of spirit directed to be distilled from the mixture, which was equivalent to reducing the proportion of acid. The next change was made in 1851, when the proportion of acid was still further diminished, and a weaker acid, of specific gravity 1·42, was directed to be used. The process now consisted in mixing 3½ fluid-ounces of nitric acid (sp. gr. 1·42) with 2 pints (40 fluid-ounces) of rectified spirit, and distilling 28 fluid-ounces of product from the mixture.

It will thus be seen that the changes which have been made

in the process of the London Pharmacopœia have all been in one direction, and have consisted in a succession of reductions in the proportion of nitric acid employed. The object appears to have been to avoid the violent reaction which occurs when strong nitric acid and rectified spirit, in certain proportions, are submitted to distillation. When nitric acid of specific gravity 1·42 is employed, little or no chemical action occurs unless the proportion of acid to spirit be at least one to four by volume. If the proportion be one to three, the action is violent and uncontrollable; in fact, in operating on more than small quantities of material, the process under these circumstances is not unattended with danger. As the chemical action becomes more intense it assumes a more complex character, large quantities of uncondensable vapors are given off, and much waste of spirit and of acid necessarily ensues.

The following experiments were made to determine the limits in the ratio of acid and spirit, within which mixtures of nitric acid (sp. gr. 1·42) and rectified spirit, when submitted to distillation in the usual way, yield nitrous ether suitable for use in medicine:—

1. A mixture of one fluid-ounce of nitric acid and three fluid-ounces of spirit was put into a retort, furnished with a thermometer, and to which an efficient condenser was attached. The heat of a lamp was applied until the temperature rose to 185°, when, chemical action having commenced, the lamp was extinguished and the process allowed to proceed spontaneously. The temperature of the liquid quickly rose to 205°; a violent reaction occurred, and much of the vapor which passed over escaped in the uncondensed state. After a short time the temperature fell to 175°, but again rose spontaneously to 190°. When the action finally subsided, there were two fluid-ounces of condensed liquid in the receiver, and nine fluid-drachms of a strongly acid liquor left in the retort.

2. A mixture of one fluid-ounce of nitric acid and four fluid-ounces of spirit was submitted to distillation with an arrangement such as was adopted in the previous experiment. A little pure spirit came over in the early part of the experiment, but this was soon followed by the production of ether, which commenced when the

temperature had reached 195°. The action was not so intense as in the previous experiment, and therefore the heat of the lamp was not withdrawn, but the flame was lowered. The temperature of the liquid in the retort rose to 200°, but afterwards fell to 185°, without any alteration in the source of heat; at this temperature ether came over freely, but without altering the flame of the lamp the heat of the liquid in the retort rose to 195° before the action ceased. The distilled product amounted to two and a half fluid-ounces, and the residue in the retort to seven fluid-drachms.

3. A mixture of one fluid-ounce of nitric acid and five fluid-ounces of spirit was submitted to distillation as in the previous experiment. When the temperature had risen to 185°, spirit began to pass over without any ether. The temperature gradually increased to 205°, with irregular ebullition, but still nothing but spirit passed over. The irregularity of the ebullition caused the temperature to vary between 200° and 205°, and this continued until six fluid-drachms of spirit had distilled, when chemical action commenced, and ether began to appear in the distilled product. The temperature now rose to 208°, and the action became so violent that much of the vapor escaped uncondensed. As the process proceeded, however, the temperature fell, and the action then became more regular and satisfactory. The result was that the total distilled product amounted to three and a half fluid-ounces, while seven fluid-drachms of liquid were left in the retort.

These experiments show that when a mixture of nitric acid and spirit is submitted to distillation, as it usually is in the preparation of sweet spirit of nitre, the proportion of spirit greatly exceeding that at which chemical action occurs and ether is produced, the first part of the process consists in the simple distillation of alcohol; and when this has been carried so far that the spirit which remains in the retort is about four times the volume of the acid, ether begins to be formed. The exact proportion of acid and spirit required for the production of ether depends upon the temperature at which they are brought into contact with each other, as will be seen from a comparison of experiments 2 and 3. The higher the temperature to which the mixture is sub-

jected, the larger is the proportion of spirit that may be present when the ether-producing action occurs; but if the temperature be above 200°, the action is liable to become so violent that much loss of product occurs, from the difficulty of condensing the vapors, and from the more complex nature of the reaction.

It has long been observed, in making spirit of nitric ether by the London process, that the nature of the product depends, to some extent, upon the quantity of ingredients operated upon, and the manner in which the heat is applied. If a small quantity of the mixture be submitted to distillation in a retort at as low a temperature as is sufficient for affecting slow distillation, the quantity of distilled product indicated in the Pharmacopœia may be drawn over without any appreciable amount of nitrous ether being formed, so that the product in such case would be little else than pure spirit. In operating on larger quantities, however, and especially in conducting the process with a steam-jacketed still, a better result is obtained, the distilled product being richer in ether, in consequence of the higher temperature attained in the process. But even in this case the result is unsatisfactory, for not only is the amount of ether produced small in relation to the nitric acid employed, but most of the acid and much of the spirit, mixed in the proper proportion for producing ether, would be left in the still as a waste residue, if the process be stopped at the point indicated. Practically manufacturers do not stop at this point, but continue the distillation, and thus greatly increase the strength of the product. There is, nevertheless, a limit beyond which the distillation cannot be carried without great detriment to the product, as the reaction becomes more and more complex as the process proceeds, and finally nitrous fumes are abundantly formed.

The nature of the reaction which occurs in this process has been investigated by many able chemists, who have shown that it varies greatly according to the conditions present, and that it is very complex, especially when the action is intense. Dr. Golding Bird, many years ago, and more recently Dr. Debus, have contributed to this investigation. Among the products of the reaction, in addition to nitrous ether and aldehyd, chemists have enumerated carbonic, formic, acetic, oxalic, lactic, saccharic

and glyoxalic acids. Hydrocyanic acid is also said to have been produced in some instances. I do not propose to enter, on the present occasion, into this part of the subject, beyond alluding to the fact, that, as these bodies are produced, there must be loss of alcohol and nitric acid, and there may be a material alteration effected in the composition of the distilled product. Intense action is therefore to be avoided, both on the ground of economy, and also with a view to the quality of the product.

I believe that the sweet spirit of nitre of commerce is always obtained by the distillation of a mixture of nitric acid and spirit, but manufacturers no doubt vary their methods of operating according to their knowledge and experience. The objects they have especially in view are, the means of satisfying the requirements of their customers, and of competing with each other in regard to quality and price. The article is manufactured upon so large a scale, and its market value is defined within such narrow limits, that any proposed alteration in the long established process for its production, that would materially alter its character or enhance its price, would be very unlikely to be generally adopted.

It is not in the dispensing of medical prescriptions that the great bulk of the sweet spirit of nitre of commerce is used, but as a popular remedy which the public are accustomed to prescribe on their own responsibility. As originally prepared, and as met with in commerce, it is an impure solution of nitrous ether in strong spirit. All the samples that I have ever examined, containing any appreciable quantity of nitrous ether, have also contained aldehyd, and I therefore consider commercial sweet spirit of nitre to be essentially a solution of nitrous ether and aldehyd. All the attempts that have hitherto been made to exclude aldehyd have practically proved failures, either by excluding at the same time the nitrous ether, or by unduly increasing the cost of the process, or by too greatly altering the character of the product. The London process failed from the first of these causes. The Edinburgh and Dublin processes have also equally failed from the latter causes, for as these processes consisted in the production of pure nitrous ether as a preliminary operation, by a somewhat wasteful method more applicable to operations on the

small than on the large scale, and the subsequent solution of the ether thus produced in spirit, in the one case in the proportion of one to four, and in the other, of one to ten, they have proved unsuited for the purpose of the manufacturer.

In the British Pharmacopœia of 1864 a new process was given for this preparation, under the name of *spirit of nitrous ether*, and great expectations were at first formed with respect to it. I need hardly say that these expectations have been disappointed. So much has been published by myself and others with reference to nitrate of soda, and its proposed use in the manufacture of spirit of nitrous ether, that it will be sufficient for me to state here, that this process has brought us no nearer than we were before to a satisfactory and available method of accomplishing what is required.

I have been engaged for a considerable time in submitting the various published processes for nitrous ether and sweet spirit of nitre to practical trial with the view of ascertaining which is the best, and have made a great number of experiments for the purpose of discovering a more satisfactory method of obtaining these products, and especially the latter one, than any of those hitherto adopted. I was anxious to find a process that would be suitable for the Pharmacopœia, and which, at the same time, would commend itself to the manufacturer, so as to induce its general adoption. To fulfill this object it was essential that the process should admit of application without difficulty on a large or small scale, with similar and uniform results, yielding a product resembling the best sweet spirit of nitre of commerce, at a cost not exceeding that at which it could be produced by any other known process. In the different attempts which have been made in this direction, both by myself and others, the object aimed at has been to set up a chemical action that can be regulated and controlled, so that while nitrous ether is produced in sufficient quantity there shall not be an undue formation of secondary products or an excessive destruction and waste of alcohol and nitric acid, as frequently occurs in the ordinary processes.

It has been proposed to effect the required object, (1) by adding the nitric acid to the spirit in successive quantities as the process proceeds; or (2) by altering the strength of the acid;

or (3) by interposing an inert medium between the acid and alcohol, through which they shall mutually pass by diffusion; or (4) by causing the nitric acid to be gradually produced in the retort by the decomposition of a nitrate; or (5) by substituting a nitrite for a nitrate; or (6) by substituting nitrous acid for nitric acid in the free state; or (7) by using some ingredient which, in the presence of the spirit, will convert the nitric into nitrous acid, without involving the destruction of alcohol and consequent formation of aldehyd and other secondary products.

The processes of the Edinburgh and Dublin Pharmacopœias belong to methods (1) and (2); they can only be practically applied on the small scale, and they are not economical. The process referred to under (3) is that of Dr. Black, which Berzelius preferred to all the others; but this, again, is not a manufacturer's process, and cannot be made such. It consists in putting into a long narrow cylindrical vessel 9 parts of rectified spirit, then introducing beneath this, by means of a funnel-tube reaching to the bottom of the vessel, 4 parts of water, so that it shall form a distinct stratum beneath the spirit, and afterwards introducing in the same way, beneath the water, 8 parts of strong nitric acid. These are allowed to stand undisturbed, for two or three days, in a room at a uniform temperature, not exceeding 53°. At the end of the process, when carefully conducted, a stratum of nitrous ether is found floating over an acid liquor. The method referred to under (4) presents no advantage over (1) and (2); (5) is the process of the British Pharmacopœia of 1864; and (6) is Liebig's process, which, although presenting some advantages, is liable to become unmanageable when anything more than small quantities are operated upon, and is, in other respects, unsuited for operations on a large scale. The last of the methods referred to (7), appeared to me to present the greatest probability that a process might be founded upon it capable of accomplishing what is required.

Kopp's process for the production of nitrous ether, consists in heating a mixture of equal volumes of rectified spirit and nitric acid, sp. gr. 1·36, in contact with copper filings, and, when chemical action has commenced, withdrawing the heat and allowing the distillation to go on spontaneously. This process answers

well for the purpose for which it was intended, and it was in working with this process and making some modifications in it, that I discovered one which appears to present advantages over any other process I know for the preparation of spirit of nitrous ether. There appeared to be some difficulty in adopting even a modification of Kopp's process on account of the increased consumption of nitric acid which it involved and the cost of the copper consumed in the process, for the nitrate of copper that would be formed, if the process were generally used in a manufacture of this extent, would not be likely to find a market. Other substances, acting in the same direction as the copper, for deoxidizing the nitric acid, were tried, but without much success. I am informed that manufacturers sometimes use iron as well as copper stills in making sweet spirit of nitre, and thus get better results than are obtained when the distillation is effected in glass or stoneware; but in my experiments I have not obtained any satisfactory results by the use of iron. Several experiments were made with starch, and also with sugar and glycerine. Many years ago, in 1850, Mr. Grant, of Bristol, suggested the use of starch instead of copper in Kopp's process; but in attempting to apply it in the preparation of spirit of nitrous ether, with an increased quantity of spirit in contact with the nitric acid, I have found that the starch remains undissolved and unaltered in the mixture of spirit and acid until so much spirit has been distilled off as to leave the nitric acid with about four times its volume of spirit, when nitrous ether begins to be formed. This, however, is just the point at which the ether would be formed if there was no starch present. The starch certainly acts beneficially in one respect,—its particles diffused through the mixture of acid and spirit cause the liquid to boil more freely and regularly than it otherwise would, and the temperature is therefore less subject to variation than it is in the distillation of the acid and spirit alone. When the formation of ether has commenced the process proceeds satisfactorily for some time, but at last a very violent reaction takes place, and nitrous fumes are copiously evolved, which, if allowed to pass into the distillate, would render the product unfit for use.

As the starch remains in an insoluble state in the mixture until

it is acted upon at the end of the process, I thought there might be an advantage in substituting some other organic body of a similar description that would be soluble in the spirit. Grape sugar and glycerine were thus tried, but with no better success than was obtained with starch. In using glycerine, however, a practical difficulty was experienced; it was found almost impossible to distil a mixture of nitric acid, spirit, and glycerine in a glass vessel, on account of the violent bumping which takes place, and which endangers the safety of the apparatus. In this respect, therefore, glycerine produces an effect the reverse of that produced by starch.

Finding that of all the reducing agents tried, copper was that which acted in the most satisfactory manner, I returned to it, and endeavored to overcome the objections that had presented themselves to its use. My object was not to produce pure nitrous ether, but good sweet spirit of nitre, and therefore the quantity of spirit required for this purpose was used. I found that in distilling a mixture of nitric acid and spirit in contact with copper, if the proportion of spirit to the acid was more than one to five by volume, the copper was but slightly acted upon; and here, as in the other cases noticed, the formation of nitrous ether did not take place to any appreciable extent until the proportion of acid to spirit was reduced to about one volume to four. The process then proceeded with great regularity, the proportion of ether in the distillate increasing as the liquid in the retort became more highly charged with nitric acid; but it was only during one short period of the process that the best result occurred, and with this exception the distillation yielded little else than pure spirit. In endeavoring to equalize the action and diffuse it through the entire process I tried the effect of adding a portion of sulphuric acid to the other ingredients, and in this way I completely accomplished the object.

After a great many trials, in which the ingredients were used in different proportions, I adopted the following process as one in every way suited for the production of spirit of nitrous ether, equal in strength and similar in composition to that described in the British Pharmacopœia:—

Take of Nitric Acid, sp. gr. 1·42,	3 fluid-ounces.
Sulphuric Acid, sp. gr. 1·843,	2 fluid-ounces.
Copper, in fine wire (about No. 25,)	2 ounces.
Rectified Spirit,	3 pints.

To one pint of the spirit add gradually the sulphuric acid, stirring them together; then add, in the same way, 2½ fluid-ounces of the nitric acid. Put the mixture into a retort or other suitable apparatus, in which the copper has been introduced, and to which a thermometer is fitted. Attach now an efficient condenser, and applying a gentle heat, let the spirit distil at a temperature commencing at 170° Fahr., and rising to 175°, but not exceeding 180°, until 12 fluid-ounces have passed over and been collected in a bottle kept cool, if necessary with ice-cold water; then withdraw the heat, and having allowed the contents of the retort to cool, introduce the remaining half-ounce of nitric acid, and resume the distillation as before, until the distilled product has been increased to 15 fluid-ounces. Finally, mix this with the remaining two pints of spirit.

In this process, when the heat has been applied, and the temperature of the liquid has reached about 150°, numerous minute bubbles of gas are observed to issue from the surface of the copper, and these increase until the temperature has reached 170°, when nitrous ether begins to be formed, and the liquid, at the same time, becomes colored with a salt of copper. The temperature now quickly rises to 175°, at which, if the heat applied to the retort be properly adjusted, it will remain with scarcely any variation throughout the process. At the temperature of 175° the distillation proceeds rapidly and steadily, the surface of the liquid in the retort being covered with a froth of about half an inch in thickness, and the space above it being filled with a transparent vapor of a yellowish color. This color is not due to the presence of nitrous fumes, but appears to be that of the ethereal vapor. The effervescence in the liquid is evidently not that of ebullition, but of chemical action, and this does not alter either in its nature or intensity, the distilled product continuing unchanged from first to last. I have never found it necessary to alter the source of heat while the distillation is proceeding if it be properly adjusted at the commencement, and the process

will often go on to the end without a variation of more than one or two degrees of temperature. When about twelve fluid-ounces of liquid have been distilled the action will slacken, in consequence of the exhaustion of the nitric acid, and this will be immediately indicated by the disappearance of the froth on the surface of the liquid. The suddenness with which this usually takes place is remarkable. It is followed by a rise of temperature in the liquid, if the applied heat remain unaltered, but when the temperature reaches 180° the heat should be withdrawn, and the contents of the retort allowed to cool. There will still be a portion of the spirit left in the retort, together with sulphuric acid, sulphate of copper, and undissolved copper, and it is for the purpose of converting this spirit into nitrous ether that the remaining half-ounce of nitric acid is to be added. When this addition has been made the distillation is to be resumed as before, until the distilled product amounts to 15 fluid-ounces. This product consists of a strong spirituous solution of nitrous ether containing thirty-five per cent. of the crude ether. On mixing it with the remaining two pints of spirit, it will have the strength indicated in the British Pharmacopœia of 1864, and will nearly answer to the other tests and characters there given. The specific gravity will be 0·845. If it be mixed with twice its volume of a concentrated solution of chloride of calcium, from two to three per cent. of nitrous ether will separate and rise to the surface of the liquid. This indicates the presence of ten per cent. of ether, as eight per cent. remains unseparated.

Spirit of nitrous ether made in this way, is, I believe, equal in every respect to that produced by any of the previously adopted processes, and it is better and stronger than most of what is met with in commerce. It is much stronger than that made by the London process, although the quantity of nitric acid employed in its production is less than one-half, and the loss of spirit is less than one-third, what they are in that process. It is therefore a very economical method of preparing the product; in fact it surpasses all the other processes in this respect, as there is no avoidable loss of nitric acid or alcohol, and the copper which is dissolved is recovered as sulphate of copper. Only about half the quantity of copper used, however, is thus dissolved; that

which remains may be employed in a subsequent operation. But the principal recommendation to the process is that it affords the means of obtaining spirit of nitrous ether, on the large or small scale, of definite and uniform strength, and composition, and of perfectly good quality. As these objects can be thus attained with ease and certainty, without any increase, but rather at a reduction, of cost, there will be no excuse for any other variation in the product than such as may arise from the change which necessarily takes place to some extent when it has been long kept in contact with the air.

Having now explained the practical details of this process, I shall not pursue the subject further on the present occasion, but reserve for a subsequent communication the notice of some points in connection with it, the investigation of which I have not yet completed.—*London Pharm. Jour., March*, 1867.

NEW MODE OF PREPARING MERCURIAL OINTMENT.

By J. H. Hart, Apothecary, New Orleans.

Finding the mercurial ointment, as usually met with in commerce, to vary in strength and purity, and many complaints by physicians having been made of its irritating effects, I would suggest the following mode of preparing the same, as offering the advantages of certainty, freshness and easy execution:

Take of stearine* and mercury, each . 1 lb.
Tinct. benzoin (saturated) . . 4 drachms.

Into the mortar in which the ointment is intended to be made place a freezing mixture of ice pounded, 12; salt, 5; potass. nit. 5 parts. Introduce into this the mercury contained in a test tube, or other suitable vessel; allow it to remain till the temperature has fallen to 32°, or below; remove and wipe the mortar thoroughly dry; immediately introduce the stearine and mercury; when the trituration is nearly completed, add the tinct. benzoin by small portions at a time. In this manner, under favorable circumstances, 2 lbs of ointment can be made in 15 minutes. The tincture of benzoin can be omitted, if desired, but will be found of great benefit in retarding rancidity.—*The New Orleans Med. and Surg Journ., May*, 1867.

* Lard deprived of its fluid parts by strong pressure.

ON A CASE OF BROMINE POISONING.

By Samuel P. Duffield, Ph. D.

On the 10th of March I ordered C. W., an employee in the laboratory, to prepare some bromide of ammonium. The process given was that of Wittstein, which consists in first forming a solution of bromide of iron, under water in a large glass balloon by the reaction of bromine upon iron turnings, and then decomposing the bromide of iron by liquor ammoniæ, filtering and evaporating to crystallization. Notwithstanding having cautioned him about inhaling the vapor, he carelessly poured rapidly, into the large glass, three pounds of bromine, which evolved vapor to quite a dangerous extent, and which he inhaled.

I was first aware of the fact by one of the workmen running to me and saying "Carl is dying." On coming to the patient I found him perfectly asphyxiated, not able to give me any intelligence as to what was the cause, but on entering the furnace room, I perceived the fumes of bromine, and, of course, realized what the true state of affairs was.

The corrosive action of the bromine was such that the glottis had closed with a spasm, and did not seem to be willing to yield. I tried ammonia vapor, but as he could not breathe, it was of no avail. I drew out the tongue, and the air would fairly whistle through the glottis, and then the spasm would shut it down tight again. For a few seconds I was unable to devise a plan, but finally based my plan upon the chemical fact that bromine, like chlorine, acts by its absorption of water from the tissues, and I thought if I could again moisten the bronchi that I might save him. Having brought him near to a flexible steam pipe we use for boiling, I made them hold the mouth open, and threw the steam from some distance, so as not to burn him, into his mouth and over his face. It had the effect. The spasm relaxed, and he was subsequently treated with ammonia vapor, and sent home to keep company with the tea-kettle. He assured me that until twelve o'clock that night he did not dare leave the tea-kettle for two minutes. The subsequent inflammatory action was easily controlled What I wish to particularly call the attention of the profession to, is the great value of steam vapor in all cases poisoned by corrosive

vapors. Ammonia can also be used by saturating a handkerchief with a weak solution, and allowing the steam to blow through it. On referring, after the danger of the case was over, to works on the subject, I find neither BECK nor TAYLOR speak of bromine. While they recognize the compounds of this halogen with others, they do not speak of its peculiar poisonous effect or its mode of treatment. Of course, when a corrosive poison has been swallowed the treatment is entirely different.—*The Detroit Rev. of Med. and Phar., April*, 1867.

NOTE.—A direct antidote to the poisonous effects of the inhalation of chlorine is sulphuretted hydrogen, which ought to answer in like cases of bromine poisoning; the halogen combining instantly with the hydrogen, liberates sulphur. We have tried it ourselves after accidentally inhaling chlorine and obtained immediate relief. J. M. M.

ON THE ACTION OF WATER UPON "CARBOHYDRATES" AT AN ELEVATED TEMPERATURE.

BY O. LOEW.

It is well known that the carbohydrates are not decomposed with separation of carbon, at a temperature of 170° C. Cane-sugar yields at 160° levulosan and glucose, at 180° caramelan, at 200° caramel, assamar and caramelin, and at about 250° it yields with total decomposition aldehyd, aceton, acetic acid, furfurol and carbon. But the decomposition takes place quite different if water is present. While dried sugar yields only levulosan and glucose at 160°, it is perfectly decomposed on heating with water in sealed tubes at the same temperature.

This decomposition is accompanied with the formation of carbonic acid and separation of carbon. Very nearly half of the carbon contained in the sugar employed is thus separated. If the black mass contained in the tube, which has a strong acid reaction, is distilled with water and the distillate saturated with carbonate of lead, and evaporated, a salt is obtained giving all the characteristic reactions of formic acid. I obtained the following results on analysis:

0·5800 grm. gave 0·593 sulphate of lead, 0·728 grm. gave 0·210 CO_2 and 0.046 water.

	Calculated.	Found.	
Pb	69·69	69·84	
C	8.08	7·87	=Formiate of lead.
H	0·66	0·69	

There is also formed in this reaction a small quantity of humic acid.

The specific action of the water in this decomposition seems to be that of an acid; for if sugar be heated with *alcohol* at the *same* temperature, in sealed tubes, it remains perfectly unchanged; not the smallest quantity of carbon is separated. Further, I have found that sugar is not decomposed by heating it with a solution of baryta in heated tubes at 170° C. Beautiful needles of sugar-baryta only are formed.

Water has the same action upon other "carbohydrates." Starch, gum, or milk-sugar heated with water to 170° for about five hours, gives formic acid, carbon and carbonic acid; gum yields the most carbonic acid. There is also formed a peculiar acid, but little soluble in water, though easily in alcohol and ether. I propose to make this acid the object of further study.—*The Am. Journ. of Science and Arts., May*, 1867.

CALX SACCHARATUM, SYRUPUS CALCIS.

MESSRS. EDITORS,—I enclose a letter from Dr. Squibb, of New York, which I received with some lime prepared with sugar. I trust that those who have undertaken to make the syrup and failed, will not be discouraged. I must caution against the use of the article in pill or dissolved in water, as it will produce nausea, or even a caustic effect. It should be given in milk. I have used it in doses as large as forty-five (45) drops every two (2) hours. Generally, thirty (30) drops every three (3) hours have been sufficient. I have never found alkaline urine to follow its use, no matter how large nor how frequent the dose.

Very truly yours,

Boston, March 31, 1867. CHAS. E. BUCKINGHAM.

DR. C. E. BUCKINGHAM, Boston.

Brooklyn, March 16, 1867.

Dear Sir,—Your paragraph, on the back of the reprint from the Boston Medical and Surgical Journal, came duly and has

occupied me ever since, though it gave you little trouble to write. On the authority of the books, generally, I did not know whether you or they were wrong, and to determine this had to go over the subject practically. I will not trouble you nor take up my time with any detail, but give you the results to use as you see proper. Sucrate of lime is a very definite thing chemically, and is soluble to any extent in solutions of sugar. To make it, it is only necessary to have lime, either caustic or hydrated, no matter which, associated with about three times its weight of sugar; but to render it soluble an additional proportion of sugar is necessary. The best proportion, practically arrived at, was one part caustic lime, (or two parts hydrate or slaked lime), with eight parts of dry white sugar, rubbed together and poured into ten parts boiling water, and boiled a few minutes; then diluted with forty or fifty parts of cold water and filtered through white paper, and the filtrate evaporated until the residue is quite brittle when cold. This is then rubbed to powder, and best given in pill. The powder is, however, perfectly soluble in water, and if perfectly dried will contain between 8 and 10 per cent. of its weight of caustic lime. The powder may be dissolved in milk or any watery vehicle. A very good formula is to take of good clean well burned lime 400 grains, dry granulated white sugar 3200 grains. Triturate well together in a mortar, and then add the powder to f ʒ viii. of boiling water contained in a proper vessel (well tinned iron or bright copper answers), and boil the mixture with constant stirring for five minutes. Then dilute to two parts with cold water, and filter through white paper. Finally evaporate to whatever consistence may be desired. If the evaporation be carried on until the liquid measures a pint, each fluid-ounce will contain about 24 grains of caustic lime, and this is about as dense a syrup as can be conveniently dispensed. If carried to f ʒ xii. each fluid-ounce will contain about 32 grains of lime or 4 grains to the fluidrachm. But this syrup is too thick for convenient management in dispensing. If the evaporation be continued to dryness, great care must be taken to avoid discoloration and scorching, as the fluid thickens and tends to bake on the bottom of the vessel. As it thickens it must be stirred continuously and kept from adhering to the vessel until all becomes translucent,

tough and ropy. It finally becomes so tough as to be very difficult to stir properly, and when a small thread of it on cooling becomes very brittle and capable of being rubbed or crushed into small particles between the thumb and finger, the heating may be finished. When cold and brittle it should be rubbed to fine powder, and this powder, according to the extent to which the drying has been carried, will contain from 8 to 10 grains in the hundred of caustic lime.

The process is simple and easy, and requires so little skill and dexterity that any ordinary pharmaceutist of the most limited acquirements will be able to make it without difficulty.

With this statement and the samples sent you by express today (expense paid) you can have no difficulty in getting it made by any one of the many good pharmaceutists in Boston.

Yours, &c.

E. R. Squibb.

The Boston Med. and Surg. Journ., April, 1867.

PTELEA TRIFOLIATA.

By Justin Steer, Ph. D.

This tall shrub, belonging to the family of Rutaceæ, is a very common plant in many parts of the United States, and generally abounds in rocky places. Its flowers have a peculiar, disagreeable odor, and its fruit is said to be sometimes used as a substitute for hops. The bark of the root has, of late years, acquired considerable reputation among physicians of the Western States, as a remedy for dyspepsia, and also as a general tonic.* The bark of the root was subjected to the following experiments, in order to ascertain whether its bitter and tonic properties were dependent upon berberin; this alkaloid having been found in a number of plants belonging to this same family. In connection with obtaining the alkaloid, a few preliminary experiments were performed in order to ascertain some of the constituents of the bark of the root.

I. A small quantity of the bark of the root was thoroughly

*See an article on Ptelea Trifoliata, by O. F. Potter, M. D., in Vol. 1, No. 1, page 9, St. Louis Medical Reporter.

dried, pulverized and comp'etely exhausted with alcohol. The resulting tincture was of a yellowish brown color. The alcohol was then distilled off, until the tincture was reduced to one-eighth of its original bulk. Upon standing for a week it deposited small globules, which were of an oily nature. It was then shaken up and thrown into a large quantity of water, when there was precipitated a resin of a yellow color, which afterwards changed to a deep brown. When placed upon paper this resin produced a greasy stain. It was readily soluble in alcohol and ether, but only partly so in liq. potassæ and liq. sodæ. Its taste was oily, acrid and bitter, and its odor reminded one of the bark from which it was prepared. This was evidently an oleo-resin. The exhausted powder which remained in the percolator was then treated with a small quantity of tinct. iodinii, which immediately produced a deep blue color, indicating the presence of starch.

II. Another portion of the pulverized bark of the root was exhausted by percolation with cold distilled water, until it passed through colorless. The infusion thus obtained was heated to the boiling point, when there was formed on the surface of it a coagulum, which proved to be albumen. The albumen was then separated and the infusion, concentrated by evaporation, was then subjected to the test for tannin, by means of a solution of gelatine, which, however, produced no precipitate, showing the absence of tannin. Another infusion was then prepared as the above, and to it was added liq. plumbi subacetatis, which produced a yellowish white precipitate. This precipitate was collected on a filter and thoroughly washed with distilled water and dried. It was then mixed with alcohol and decomposed by the addition of SO_3 which was added until it no longer produced a precipitate of sulphate of lead. The sulphate of lead was then removed by filtration, and the filtered liquid, which was of a bright yellow color, was allowed to stand for a length of time, when there was deposited a yellow crystalline substance, which was odorless, tasteless, insoluble in ether and water, but readily soluble in liq. potassæ, with which it produced a brilliant yellow color, and alcohol. With concentrated sulphuric acid it produced a beautiful purple color. This was then the yellow coloring matter of the bark.

III. The bark of the root was reduced to ashes in a crucible. The ashes were then digested in distilled water acidulated with muriatic acid. The liquor thus obtained was filtered and tested with the following reagents:

Oxalate of ammonia, which produced a white precipitate, showing the presence of a salt of lime.

Bi-chloride of platinum, a yellow crystalline precipitate, a salt of potassa.

Ferrocyanide of potassium, a light blue color, a salt of iron.

IV. The bark of the root was treated for berberin by the same process that is employed for obtaining this alkaloid from Berberis vulgaris. The bark of the root was pulverized and infused with boiling distilled water. The infusion was then evaporated to the consistency of a soft extract, which was exhausted with alcohol, and evaporated to a small bulk, and, while yet warm, sulphuric acid was added, when upon cooling the sulphate of berberin was obtained in small acicular crystals. The sulphate, having been dissolved in water, was then decomposed by oxide of lead. The liquid was then filtered and allowed to crystallize. The crystals thus obtained were very small, yellow and acicular. They evidently were berberin, as the following tests will show. They were soluble in water and also in alcohol, and insoluble in ether. They dissolved readily in sulphuric acid, producing an olive green color. With nitric acid they produced a blood red color. The sulphate of berberin, as prepared above, was precipitated from its solution by iodide and bromide of potassium, and also by bi-chloride of mercury. The taste of the sulphate and also of the isolated alkaloid was extremely bitter. Berberin, then, is the bitter and tonic principle of the bark of the root of Ptelea trifoliata, upon which its virtue depends.—*St. Louis Med. Reporter, May*, 1867.

MANUFACTURE OF BORAX.

Instead of the old process of neutralizing the Tuscany acid with soda and water, the English manufacturers now perform this operation in a reverboratory furnace, where the acid, with the required quantity of soda-ash, is brought into fusion, and

where provision is made for the escape and subsequent collection of the large quantity of fossil ammonia, which is always present in the crude acid. The whole process then is similar to the preparation of sal soda from cake. The oxide of iron which the concentrated solution holds in suspension is removed by the addition of a minute quantity of sulphuret of calcium cake, left from the extraction of crude soda. A sulphuret of iron forms, and also a voluminous precipitate of lime, which latter envelopes the iron compound and carries it to the bottom. This renders the solution somewhat alkaline.

Hayesite or Boronatrocalcite, from Chili, which occurs together with Chili nitre, and is a mixture of soda and lime-borate with up to 38 per cent. of water, the outer portions being often mixed with considerable quantities of gypsum, salt, etc., but even the best varying from 12 to 50 per cent. in boracic acid. Owing to the variability of its richness in that acid, the mineral is neglected as a source for borax, the more so since both the Chilian mineral and the Tuscan product are monopolized by one interest.—*Druggists' Circular, February*, 1867.

NOTES ON PRESCRIBING.

By Daniel Hanbury.

Although more than fifty years have elapsed since the learned Dr. Paris placed before the medical profession his observations on the theory and art of medicinal combination, it may safely be asserted that nothing has been since written on the same subject more replete with sound and accurate information.

Yet every year adds to our experience: not only are new drugs introduced, but new combinations and new forms of administration are also adopted; and the prescriptions of the present day differ as much in character from those that found their way to the druggist's counter half a century ago, as do the medicines then in vogue from those which are now in use.

The art of prescribing, it must be admitted, is not a subject coming precisely within the province of the pharmaceutist, yet the pharmaceutist is necessarily acquainted with the methods of prescribing which are prevalent and is more capable than any

other person of judging of the merits of formulæ under pharmaceutical and chemical aspects.

It has long appeared to me that some of these methods or modern phases of prescribing call for notice in the pages of the *Pharmaceutical Journal*, and in the hope that the subject may be further handled, I have thrown together the observations here presented. Some of the formulæ that I shall quote will afford evidence that the precepts of the author of the *Pharmacologia* and the rules of chemistry are too little observed, and that the duties of the private dispensary performed by many of the older physicians while practising as apothecaries, enabled them to avoid the errors and eccentricities into which some of their successors occasionally fall. The result of mixing the ingredients ordered in a prescription is sometimes very unexpected, so that even the most practised dispenser is often unable to predict whether certain given ingredients can be united into a compound that shall be suitable for administration:—and if the pharmaceutist whose time and skill are chiefly devoted to the mixing of drugs is thus at fault, it is hardly surprising that the physician whose mind is mainly directed to other subjects, should sometimes prescribe ingredients that it is impossible to combine, or that, if combined, cannot be taken, or are devoid of the required efficacy.

For convenience I shall place my remarks under different heads and shall notice firstly

Unchemical Formulæ.

As an example let us take the following:

℞ Barii chloridi gr. iss.
Ferri sulphatis gr. ij.
Extracti gentianæ q. s.
Ut fiat pilula.

The writer of this formula was a frequent prescriber of chloride of barium, which he generally ordered in combination with sulphate of quinine or sulphate of iron, or with both, thereby probably rendering the chloride inert. No reliance could of course be placed on the uniform effects of baryta, prescribed sometimes in a state of activity and sometimes in an inert form.

As another example of this character, take the following prescription which was brought to be dispensed a few weeks ago:

℞ Potassii iodidi ℈i.
Potassæ bicarbonatis ʒiss.
Ferri et quiniæ citratis ℈iv.
Tinct. valerianæ ammoniatæ ʒj.
Aquæ ad ʒiv.
Misce. Sumat cochleare medium ex aquâ ter die.

In preparing this medicine, the iodide and bicarbonate were dissolved in a portion of the water, to which the tincture was then added. The citrate was dissolved in the remainder of the water and the two solutions were mixed. The result, as might be expected, was that a frothy white precipitate of quinia was instantly formed, which in a few minutes collected into a coherent mass, sufficiently hard and tough to be rolled into pills.

It may be observed that in compounds such as this, the quinia is not subject to the remarkable influence which citric or tartaric acid exerts on peroxide of iron,—that of allowing it to be combined with an alkaline bicarbonate or with ammonia—but that it is more or less separated when such alkalies are mixed with it, a fact very often overlooked.

A third instance of extremely unsuitable combination occurs to me, which from its frequency a few years ago was impressed on my memory, although I have no copy of a prescription in which it was ordered. It was the prescribing of *glacial* phosphoric acid *in pills*, and that in combination with valerianate of zinc!

Formulæ that give rise to unexpected combinations.

A very interesting fact bearing on this point has been stated in a recent number of the *Journal de Pharmacie et de Chimie.** M. Melsens has proved by experiment that pure iodide of potassium may be administered to dogs in considerable doses without occasioning any ill effects; and that chlorate of potash in somewhat strong doses is also tolerated when administered continuously for at least a month. Treated with iodate of potash, however, dogs die rapidly. If iodide of potassium and chlorate of potash in equivalent proportions are given to dogs, such mixture speedily proves fatal;—and yet, as is well known, these salts do not under ordinary circumstances decompose one another. These

* November, 1866, page 338.

experiments have an important practical bearing on the art of prescribing, showing that medicines, harmless when administered separately, may become highly deleterious when given in combination.

The following case of unexpected change in the composition of a medicine was of actual occurrence. A prescription was written for a mixture of which the more essential ingredients were Rochelle Salt and Calcined Magnesia, the one dissolved, the other diffused in peppermint water. The mixture was prescribed and taken without particular remark, until, upon one occasion, recourse was had to a bottle which had been prepared some weeks before. The dose was found extremely different from any that had been taken previously: in fact it had so caustic a taste as to excite the alarm of the patient, who suspected a serious error on the part of the druggist. The physician was consulted, and finally an analytical chemist was requested to examine and report on the medicine. This resulted in an explanation:—the Calcined Magnesia, by prolonged contact with the alkaline tartrates, had gradually abstracted their tartaric acid, leaving their alkalies in a free and caustic state.

The dispenser of prescriptions is sometimes puzzled to know what *color* to make a medicine, the color being dependent *on the order* in which the ingredients are mixed. For instance, a lotion was prescribed composed of calomel, lime water, and chloride of zinc. If the calomel was decomposed first, the lotion was *black:* if the chloride of zinc first, it was *white.*

Lotions in which both chloride and bichloride of mercury are ordered with lime water, are easily made to vary from yellow to brown or black, according to the order in which the two mercurials are decomposed. A lotion made according to the following formula is either transparent and colorless, or opaque and of a brick red, according to the order in which the ingredients are mixed:

℞ Potassæ chloratis,
Boracis *aa* ℥ss.
Hydrargyri bichloridi gr. iv.
Glycerinæ ℥ss.
Aquæ ad ℥viij.

Misce.

Although hardly coming under this section, and rather deserving to be ranged under the head of *ill-contrived formulæ*, may be instanced the following:

℞ Unguenti hydrarg. nitratis ʒiij.
" cetacei ℥j.
Liquoris potassæ ʒij.
Linimenti saponis ad ℥vi.
Misce. Sit linimentum capiti omni nocte infricandum.

℞ Confectionis opii ʒij.
Olei terebinthinæ ʒiss.
Sp. ammoniæ aromat. ʒiij.
" camphoræ ℥iij.
Fiat linimentum.

℞ Potassii iodidi ʒi.
Morphiæ acetatis gr. x.
Aceti colchici ʒiv.
Olei sulphurati ℥i.
Misce. Fiat linimentum.

The next subject on which I must beg leave to offer a few remarks is the

Undue concentration of Medicines.

There is no practice in the modern method of prescribing more fraught with inconvenience to the pharmaceutist, and risk to the patient, than that of ordering medicines in an excessively concentrated form. The object for doing so is in most cases that the patient may obtain a large supply of medicine at a small outlay; in others, because medicine in a concentrated form is more convenient for being carried from place to place. That the prescriber should have a due regard for the pocket of his patient, and wish to diminish as much as possible the expenses attendant on sickness, is doubtless commendable. But when this is done at the expense of safety and of efficacy, it becomes an abuse which demands rectification.

All druggists know that forty or fifty years ago liquid medicines for internal use were very commonly prescribed in the form of *draughts*, or doses each contained in a single bottle;—that these have been gradually superseded by *mixtures*, containing

usually six, eight or twelve doses, and that these last are now often replaced by highly concentrated and smaller mixtures technically called *drops*, each bottle of which contains a large number of doses. Most will admit that the dispensing of medicines in the form of *draughts*, except in rare cases, involves more labor and expense than are necessary for any purposes of accuracy or convenience. But in resorting to the compounds which are now prescribed as *drops*, we are going to the other extreme. It is a practice of recent introduction and finds no place in the *Pharmacologia* of Dr. Paris, who does not give a single specimen of such a manner of prescribing.

As evidence of the objectionable character of prescribing medicine in a very concentrated shape, I shall quote a few prescriptions, all of which I have myself lately observed.

℞ Liquoris strychniæ ʒij.
Tincturæ valerianæ ℥iij.
Spiritûs chloroformi ℥j.
" camphoræ ʒiij.
Magnesiæ sulphatis ℥j.
Misturæ camphoræ ad ʒviij.
Misce. Sumat cochleare unum magnum pro dosi.

This mixture is too alcoholic to retain in solution the sulphate of magnesia, which, although first dissolved in the camphor julep, subsequently concretes into a crystalline mass.

℞ Liquoris Donovani ʒviss.
Potassæ bicarbonatis ʒv.
Tincturæ calumbæ ad ℥iij.
Misce. Signa—Forty minims (by measure) in water twice a day after meals.

Here again the liquids are insufficient to dissolve the alkaline salt which remains at the bottom of the bottle as a dense white powder, not to be shaken up and poured into a minim measure.

℞ Chlorodyne ʒiss.
Sodæ biboratis ʒj.
Sp. camphoræ
" ammoniæ com.
" ætheris sulph. *aa* ℥ss.

Misce. Take a small teaspoonful in a wineglassful of water when required, and repeat the dose every two hours until the pain is relieved.

The addition of the borax to the other ingredients occasions the separation of a sticky mass, which adheres to the sides and bottom of the bottle in such a manner that the intended dose cannot possibly be administered, a difficulty which would be entirely obviated had the mixture been ordered in a dilute form.

℞ Hydrargyri bichloridi gr. vj.
Liquoris arsenicalis ʒijss.
Tinct. cardamomi comp. ʒiij.
Aquæ ℥vj.
Misce. Sumat cochleare unum minimum bis die.

℞ Quiniæ disulphatis ʒss.
Acidi phosphorici diluti ʒx.
Liquoris arsenici chloridi ℥j.
Tincturæ ferri muriatis ʒxj.
" aconiti ʒiij.
" calumbæ ℥iss.
Glycerinæ ad ℥vj.
Sumat cochleare unum minimum pro dosi.

Medicines prescribed according to such formulæ as this and the preceding, are dangerous from their extreme concentration, and from the large quantity ordered rendering them liable to be mistaken for comparatively dilute mixtures taken in the dose of two or three tablespoonfuls.

℞ Tinct. aconiti (Flemming) ʒij.
Sumat gutt. j tertiis horis ex aquæ ʒij.

℞ Strychniæ gr. j.
Acidi phosphorici diluti ℥j.
Sumat ♏ v ex aquæ cyatho vinario ter die.

℞ Strychniæ gr. ij.
Aquæ destillatæ ʒv.
Solve ope
Acidi hydrochlorici diluti ♏ iv.
et adde
Vini ferri ad ʒx.

Misce. Signa—Take ten minims by measure in water every morning before breakfast, and increase the dose every other morning by one minim up to 18 or 20 minims.

℞ Ext. cinchonæ liquidi,
Liquoris calcii chloridi *aa* ℥ss.
Fiant guttæ.

℞ Acidi arseniosi gr. ij.
Syrupi zingiberis ℥ij.
Fiat mistura.

In the five formulæ above quoted, the medicines are ordered to be furnished to the patient in (as it seems to me) a form far too concentrated. By the first of them a bottle containing about 150 doses of the strongest Tincture of Aconite is supplied with directions that a dose is to be taken every three hours. In the second nearly a hundred doses of Strychnine are ordered to be placed at once in the hands of the patient. The third prescribes five weeks' supply of strychnine in a ten-dram mixture, and is also deserving notice for the complicated directions to the patient for calculating his dose. The fourth is objectionable from the fact that the ingredients are decomposed for want of a suitable excipient, the resin of the bark being precipitated on the bottom and sides of the bottle, so that it is impossible for the patient to obtain the intended dose. No such difficulty would arise if each ingredient were reasonably diluted previous to mixing, and the dose apportioned accordingly. The fifth formula is dangerous from ordering the arsenic to be treacherously disguised in the form of a very palatable syrup, which might in ignorance be taken far too freely.

The experience of any dispensing pharmaceutist will readily testify that prescriptions such as those here quoted are now-a-days by no means unfrequent. That they are highly objectionable all will allow, inasmuch as in many cases they do justice neither to the patient, the physician nor the pharmaceutist. Those of the last category are reprehensible for the sake of the patient, who is furnished with a large supply of potent, or it may be even dangerous medicine which is to be taken for a length-

ened period, almost according to his own pleasure and judgment; for the sake of the physician, who by such prescriptions must often deprive himself of the opportunity of watching the effect of the remedies he orders; and lastly for the sake of the pharmaceutist, on whom is thrown a heavy risk of error and accident, counterbalanced by no proportionate increase of profit, but actually accompanied by a much diminished scale of remuneration. —*London Pharm. Jonrn.*, March, 1867.

MEDICATED COCOA BUTTER.

By Ferris Bringhurst.

Using considerable quantities of cocoa butter, and often having small pieces about, we have frequently given away or sold these for use as lip salve, and so much was it liked that it was evident that, if properly medicated and perfumed, and neatly put up, it would meet with a ready sale.

A camphor ice tray was accordingly procured of Prof. Parrish, some neat boxes, of proper size, with labels to suit, and the butter prepared from the following formula:

R. Yellow wax, ...	4 oz.
Cocoa butter (fresh), . . .	28 oz.
Balsam Peru, ...	1 dram.
Benzoic acid, ...	1 "

Melt together, strain, and add oil of rose, bergamot and bitter almond, q, s. to perfume pleasantly, and when nearly cool 1 oz. glycerine.

If the cocoa butter is fresh, its own aroma is so pleasant as to require but slight addition of essential oils, those mentioned seeming to be more appropriate than any other combination.

My anticipations in regard to it were fully realized, and in less than two months after its introduction we had dispensed about two gross.

It is much prescribed by our physicians, and, though originally designed as an application to chapped hands and lips, it has been used for a variety of purposes, such as sore nose, sore mouth, sore nipples, chafes, as an after dressing for blistered

surfaces, &c. &c., in all cases exhibiting remarkable soothing and healing properties.

The perfect blandness of cocoa butter, its solidity yet ready fusibility at the temperature of the body, its tendency to keep well, especially when combined as above, and its unusual healing power, all recommend it as worthy of a more general use.—*The Report of the Alumni Assoc. of the Phila. Col. Pharm.*, 1867.

Wilmington, Del.

OBSERVATIONS ON BENZOINATED OINTMENTS AND CERATES.

By Chas. L. Eberle.

Since the introduction of benzoinated populinated and similarly treated cerates and ointments, their application has met with wide-spread favor, and it became desirable to determine in how far they might be therapeutically affected by the admixture.

Our Pharmaceutical Association proposed the subject in a query, which was accepted, and commented upon by Mr. Doliber, of Boston, at the last annual meeting of that body.

During the past year my attention was considerably directed to the determination of the query, and the subjoined remarks are offered in support of the assertion that, while rancidity in an unguent may defeat the purpose of its creation, and often do harm by the irritation it produces upon sensitive surfaces, the benzoinating process, under proper restriction, prevents the sensible properties of the same from modification or change, without in the least affecting its therapeutic action.

Where the unguents containing lard were prepared extemporaneously, that benzoinated, by furnishing the hog butcher with a quantity of tincture of benzoin, of the strength of four troy-ounces to one pint of stronger alcohol, to be incorporated in the proportion of one fluidounce to each pound, while the fat was still fluid and warm, and well stirred to expel the spirit, was used.

In other instances myroxylon was added, in the proportion of six drops to each ounce of dark colored, and three drops to the same quantity of those of light hue. This addition can best

be made at the point at which the cooling fluid will sustain the myroxylon upon its surface, dropping it upon the centre, and stirring slowly at first with the point of the wood spatula, gradually incorporating it with the mass.

Where this care is not observed the mass is disfigured with minute dark specks; and should the addition be made before the point in cooling mentioned is reached, a separation of constituents is effected, and collects as a resinous globule in the bottom of the vessel, and cannot afterwards be properly incorporated.

The process was applied to most preparations, officinal and otherwise, which in the course of business would suggest its use, since November, 1865, among which were the following:

Unguentum adipis,
" Aquæ rosæ,
" Gallæ,
" Hydrargyri,
" Hydrarg, oxid. rub.,
" " nitrat.,
" Plumbi carb.,
" Zinci oxidi,
Cerat. plumbi subacet.,
" Adipis,
" Cetacei,
" Zinci carbonatis.

They were dispensed at varying intervals, kept indefinitely well, and, upon inquiry instituted as to their behavior therapeutically, confirmed the supposition of their properties being unaltered by the combination.—*Report of the Alumni Assoc. of the Phila. Col. of Pharm.*, 1867.

Germantown, Pa.

SILVERING UPON GLASS.

Having occasion recently to silver some thin microscopic glass, several processes were tried with indifferent success, until finally I hit upon Bothe's method as modified by Böttger (J. pr. Ch., xcii, 494) which afforded most excellent results. Its simplicity,

economy, and satisfactory performance induce me to reproduce it here.

7·8 grains of argentic nitrate are dissolved in 60 cc. of water and the solution is divided into two equal portions. A solution of 3·11 grams. potassio-sodic tartrate (Rochelle salt) in 1420 cc. of water being brought to *active ebullition*, one of the above portions of the silver solution is gradually added, the boiling is continued 8 or 10 minutes, the whole is allowed to cool and is then filtered. This is the reducing solution.

To the second portion of the silver solution, caustic ammonia is added till the precipitate is *almost* redissolved, care being taken to avoid an excess, and then 355 cc. of water being added, the whole is filtered.

To silver the glass, equal portions of these two fluids, thoroughly mixed and perfectly clear, are poured upon it. After the lapse of about *ten minutes*, a most brilliant layer of metallic silver is deposited, which may be thickened to any desired extent by repeating the process. The film is protected by a layer of varnish.—G. F. B.—*Amer. Jour. of Science and Arts, March*, 1867.

ASSAFŒTIDA.

By Dr. J. E. Polak.

Asafœtida, called in Persian *Anguzeh* (of which our word *asa* may be an abbreviation), and in Arabic *Heltit el mumtin*, was in former times abundant on the trachyte range lying between Ispahan and Mahiar. Thither the assafœtida collectors from Khorassan came every year in spring; they surrounded the plant with a bank of stones, cut off its stem, and then collected the gum-resin. But as they left no stem for producing seed, only some isolated plants are now to be found in this locality. The plant is however still plentiful between Abadeh and Murgab, where, as well as in the southern province of Laar, assafœtida is collected. About Abadeh in the spring the sheep feed on the leaves of the plants; and I was assured by credible witnesses that the milk and butter obtained from the animals thus pastured, is so fœtid that none but the inhabitants can make use of them. I have also received from Herat, through an English physician,

several shoots which were quite covered with gummi-resinous tears. From the occurrence of the plant in the hot province of Laar and other regions it is evident that it is adapted to a warmer climate and a lower elevation above the sea-level.

The greatest quantity of assafœtida is exported to India, where it is employed for culinary purposes. It forms a frequent ingredient of the sauces eaten with the *pillaw*. Its medicinal use in Persia is very extensive, especially against spasm; there are persons who have so accustomed themselves to its use, that it has become to them as much a necessary of life as opium is to an opium-eater. In fact it exerts by long use a remarkable action in tranquilizing spasmodic pains, a property which deserves to be more regarded in Eurpe.

The young shoots of the plant, after immersion in vinegar, are willingly eaten by the Turkomans. In many parts of the country I was informed that they fence round the fields with assafœtida plants, as a protection from the attacks of insects.—*London Pharm. Journ., April*, 1867, from *Persien; das Land und seine Bewhnor*. Leipzig, 1865. Zweiter Theil, p. 282.

ON THE CULTIVATION OF JALAP.

By Daniel Hanbury, F.L.S.

The considerations which render it expedient that the cultivation of Jalap should be attempted in some other country than that in which the plant is indigenous, are the following:

1. The present supply of Jalap is precarious and fluctuating.

2. The drug is often of bad quality even when genuine, owing to the rude method in which the tubers are dried, and frequently to their having been collected while too young and small.

3. The frequent admixture of other roots with the Jalap of commerce.

The cultivation of jalap, to be successful, must result in producing the drug identical in medicinal activity with that hitherto employed, of uniform good quality, of moderate price, and in sufficient quantity to be noticeable in the market. Experience alone can determine whether all or only some of these desiderata can be attained.

Let us now consider what is the climate, and what the soil, of the region in which the jalap-plant (*Exogonium Purga*, Benth.) naturally thrives,—and what the method actually pursued for collecting and preparing the drug for the market. On these subjects, the most graphic information that I have met with is contained in a letter addressed by Dr. Schiede, a German traveller and botanist, to Dr. D. F. L. von Schlechtendal; it bears date *Mexico*, 26 *October*, 1829, and was published in the periodical called *Linnæa* the following year. Of this letter, the following is a translation:

"Before I leave Chiconquiaco* I must communicate to you the most interesting facts which I have observed on the occurrence of *Convolvulus Jalapa*, as well as what I have learnt respecting the collection of the root and its preparation for the market. In my last collections from Jalapa, I sent you a large number of flowering specimens, and added a short description of the plant, so that this latter I may here omit.

"The herbaceous plant whose tuberous root furnishes the almost indispensable medicine called *Jalap*, does not grow in the immediate vicinity of Jalapa, but several thousand feet higher, on the eastern slopes of the Mexican Andes, especially about Chiconquiaco and the neighboring villages, and also, as I hear, about San Salvador, on the eastern slope of the Cofre de Perote. The mean altitude at which the plant occurs may be stated as about 6000 feet. In this region it rains almost the whole year through. During summer, fine clear mornings are commonly succeeded by violent showers in the afternoon; in winter indeed these latter do not occur, but dense mists lie for days and weeks with but few clear intervals, on the mountains as well as on their declivities. The plant prefers shade, and is found only in woods, where it climbs over trees and bushes. The flowers appear in August and September. The root is dug up during the whole year, but probably that is preferable which is collected before the young shoots appear,—that is to say, in March and April.

Note.—Chiconquiaco is a village situated on the mountain known as the Cofre de Perote, and in the region called by the Mexicans *Tierra fria*.—D. H.

The tubers are sometimes elongated, sometimes round, and always terminate in a rootlet. In the fresh state they are whitish, almost inodorous, and full of a viscid juice, which has a peculiar acrid taste. When collected, the larger tubers are cut through, but the smaller left entire. As drying them in the sun would probably be impracticable, they are placed in a net and then hung over the almost constantly burning hearth, where by degrees they dry, and by which process they almost always acquire a smoked appearance and somewhat sooty smell. In about ten to fourteen days the *Purga* is dry, and is then taken by the collectors, who are mostly Indians, to Jalapa, where it is bought up, and whence it is conveyed by way of Vera Cruz into the markets of Europe.

"The Indians of Chiconquiaco are commencing to cultivate the Jalap plant in their gardens. The future will show whether its powers are in any degree impaired by cultivation. Cultivation will afford the advantage that the roots may be collected at the most favorable time of year, which in the thick forests is attended with difficulty. I do not abandon the hope that *Convolvulus Jalapa* may some day be planted in our gardens on a large scale; is not the potato a native of a similar region? The plant will scarcely bear the severity of a German winter in the open air, but the spring and autumn frosts will not, I think, injure it, for it has to endure the same reduced temperature in its native home.

"I now hear that the root has also been exported from Tampico, which shows that it occurs northward of the mountains of Chiconquiaco, perhaps in the Sierra Madre."

To this account may be added a few lines extracted from a letter received from a valued correspondent of my own in Mexico, to whom I am also indebted for more than a hundred living tubers of the jalap plant.

"The tubers of Jalap require a deep rich vegetable soil (*debris* of the leaves of *Pinus*, *Quercus*, *Alnus*, etc.), and as they grow at an elevation of from 7000 to 10,000 feet above the level of the ocean, they can stand a good deal of cold and even frost during the night. In the daytime from 60° to 75° Fahr. is

their almost daily warmth. Around Cordova, the plant will not succeed, the climate being too warm. I would advise you to plant some of the tubers out in the free air, treating them like Dahlias,—that is, to take up the roots in October, and plant them again in March or April. Although the plants may not flower or ripen seeds, the tubers will grow in size, and, what is more important, will multiply underground *ad infinitum*. If Jalap roots have so far failed in Europe, it is because they have been treated as hothouse plants."

Having these data regarding the climate and soil which are natural to the jalap plant, we must next consider what regions offer conditions sufficiently similar to render the culture of the plant probably successful. It is plain from the accounts I have quoted that a humid climate having a temperature rising in summer to about 75° F., and sinking in winter to the freezing point, is that which the plant naturally affects; and this is confirmed by the fact that the plant thrives perfectly well in the open air during the summer months, in gardens in the south of England, but that it will not endure unprotected the severe frosts of winter. Whether the great altitude above the sea-level at which it occurs in Mexico is an indispensable condition for its complete development, is a point on which we have no information.

[The author now suggests Cornwall, Devonshire, the Isle of Wight, Madeira, and some localities in India, as probably suitable for its cultivation, and then continues:]

It must not, however, be supposed that no attempts to cultivate jalap have been made, though it may be safely asserted that none have resulted in obtaining for the market a better supply of the drug. In Mexico, as Schiede relates, the Indians were commencing in 1829 to cultivate the plant in their gardens; and I have been informed by a London druggist that some of the jalap now found in the market is derived from cultivated plants. The late Dr. Royle states that he sent plants obtained from the Royal Horticultural Society and from Dr. Balfour, of Edinburgh, to the Himalayas, where he hoped they would soon be

established.* In 1862 I forwarded to Mr. N. Wilson, Curator of the Botanic Garden at Bath, Jamaica, a jalap plant, of which he wrote to me in October, 1863, that it was growing luxuriantly at an elevation of 2000 feet, and that he had no doubt the plant could be cultivated on the mountains of Jamaica as an article of commerce.

The culture of *Exogonium Purga*, Benth., is also being attempted in the south of France by Prof. Dr. J. E. Planchon, of Montpellier, and by M. Gustave Thuret, of Antibes, but the summer climate of those localities is so much drier than that of the region in which the jalap plant is indigenous, that success is doubtful. Tubers have also been sent to Madeira.

There is one other point in connection with this subject upon which we seem to require information, and that is the age at which the jalap tubers can be collected to most advantage. It is well known that the jalap of commerce consists of tubers of all sizes between those weighing a few grains up to such as weigh several ounces,—and that the larger, and those which are internally most compact, dry, and resinous, are preferred.

The adoption of a better method of drying the tubers than that at present pursued will also deserve attention. It is probable that this object will be accomplished by slicing the tubers while fresh, and drying them with the gentle heat of a stove.—*Lond. Pharm. Jour.*, May, 1867.

ON THE GEOGRAPHICAL RELATIONS OF LAURACEÆ.

By C. F. Meissner.

[A paper on the above subject was presented to and published by the Bavarian Academy of Sciences. We extract the following review from the last chapter:]

1. The Lauraceæ contain 972 species, constituting an order of the fifth rank.

* *Manual of Mat. Med. and Therap.*, ed. 1853, p. 553.

In Birdwood's *Catalogue of the Economic Products of the Presidency of Bombay*, Bombay, 1862, it is stated at p. 57, that *Exogonium Purga*, Benth., is "cultivated on account of Government at Hewra." I am, however, assured that there is some error in this statement, and that the plant does not now exist in the Hewra garden.

2. They are distributed over the five continents, having their largest number in America (447 species) and Asia (445 species); then follows Australia with 56, Africa with 25, and Europe with one species.

3. The Eastern Hemisphere possesses 60 species more, but 5 genera less than the Western. The tribes Litsæaceæ (256 sp.) and Perseaceæ (149 sp.) constitute the bulk of species in the Eastern, and the tribes Oreodaphneæ (246 sp.) and Cryptocaryeæ (117 sp.) in the Western Hemisphere.

4. All six tribes are represented in America, while the Oreodaphneæ are wanting in Asia and Australia, and the Gyrocarpeæ in Africa.

5. America contains absolutely and relatively the largest number of genera, namely, 32, of which 23 are peculiar to herself.

6. The Lauraceæ predominate between the tropics, rapidly decrease in number towards the poles, and are completely excluded from the colder temperate, high alpine, arctic and antarctic zones. The equatorial zone contains 538, the rest of the tropical zone, 365, the northern outer tropical, 88, and the southern tropical zone, 85 species. Excluding the equatorial zone, the Northern Hemisphere has 282, and the Southern 256 species.

7. The majority of the American species (406) grow on the continent, only 41 on the islands, while in Asia the islands produce 310, (of which only 24 are not tropical,) and the continent only 135.

8. All species are endemic, growing only in one continent, and mostly in one of its floral districts only; the same is the case with most of the genera.

9. The majority of the Lauraceæ appears to grow in hot, low lands, and chiefly in moist situations; next, they inhabit drier hilly parts, the lower mountains and shady mountainous forests of the coasts.

But very few appear to reach up to the true alpine regions; only under the tropics some grow at such heights, the climatic conditions of which approach those of the arctic-alpine regions.

10. In relation to the history of the organic creation, it is to

be observed that the Lauraceæ belong to the oldest forms of plants appearing amongst the earliest dicotyledons, excepting those of the chalk stratum; they have apparently held no unimportant position in the tertiary forests.

The geographical conditions of the Lauraceæ resembles in many points, and to a high degree, those of the Myrtaceæ, which are almost excluded from Europe, and entirely from the arctic-alpine and antarctic regions, but are concentrated in considerable numbers and similar uniformity in the tropical zone of America and Asia, upon the continents and islands, and in outer tropic zones occur more numerous in the Southern than in the Northern Hemisphere, and to a larger extent in Australia than in South Africa. The myrtles, however, differ from the laurels, in attaining more rarely the size of high trees, in appearing more numerous in Australia, and in their genera of the tropics, which occur more frequently in both hemispheres.

The Lauraceæ agree likewise, in several of the above points, with the Araliaceæ, Piperaceæ and Aroideæ, while those families which are more closely allied to them in structure and physiognomy, like the Polygonaceæ, Santalaceæ and Thymelaceæ, differ considerably in their geographical relations.—*Abhandl. der k. bayer. Akad. d. Wiss.* II. C. X. Bd. I. Abth.

J. M. M.

ON THE PREPARATIONS OF CONIUM OF THE BRITISH PHARMACOPŒIA, AND THE TINCTURE OF THE LONDON PHARMACOPŒIA.

By John Harley, M. D., Lond., F. L. S.
(Assistant Physician to King's College Hospital, etc.)

(*Continued from p. 272.*)

In my last communication I gave an account of some experiments with two samples of the *tincture of the dried leaf*. The conclusion to be derived from them clearly coincides with that formed of the tincture of the fruit, viz., that it is practically an inert preparation.

As far as a *spirituous* preparation of the dried leaf is concerned, I think my experiments are conclusive. They entirely accord with my previous experience, which first led me to mistrust the preparation.

Feeling, however, that it is a matter of considerable importance to determine whether the dried plant does retain any active properties, and if so in what degree, I have carefully examined the dried leaves, from a portion of which the tinctures employed in my experiments were prepared. Excepting in the *poultice*, the dried leaf is no longer used in the British Pharmacopœia; but the importance of the investigation will be recognized when it is observed that the dried plant is largely used in some other Pharmacopœias. Looking first to our nearest neighbors, I find that the French Codex contains no less than six preparations of the dried leaf, viz:—1. An alcoholic extract; 2. A plaster made of this extract; 3. An injection, composed of an infusion of the dried leaf; 4. Powder of the dried leaves; 5. An ætherial tincture; and lastly, 6. A tincture.

The Norwegian Pharmacopœia has two preparations of conium. 1. The dried leaf, prescribed as follows:—"medium dose, 2 to 3 grains; 10 grains would be a dangerous dose." 2. An aqueous extract of the dried leaf treated by alcohol, of which it is said:—"medium dose 1 to 2 grains; a dangerous dose, 6 grains."

There is scarcely a Continental Pharmacopœia which does not contain these and similar preparations of conium.

The United States Pharmacopœia contains four preparations of conium, three of which are derived from the dried leaf:—1, an alcoholic extract; 2, a fluid extract; and 3, a tincture corresponding to that of the London Pharmacopœia.

It is to be observed that the dried plant is thus extensively used notwithstanding that some very competent observers have expressed doubts respecting its activity. Geiger indeed expressly states* that the dried leaves of hemlock do not contain any conia, and Pereira says† "no reliance can be placed on the dried leaves, however carefully prepared, for they sometimes yield no conia, though they possess the proper hemlock odor and a fine green color." Of these two statements the latter is nearer the truth, but it implies—what I believe is untrue—that some dried

* Magazin für Pharmacie, xxxvi.

† Pereira, Elem. Materia Medica, vol. ii. part ii. p. 195.

hemlock leaves do possess the active properties commonly ascribed to them.

The following are my observations upon this point:—

Examination of the dried leaves used in the preparation of the tincture above referred to.

I. February 11, 1867. Took one ounce avoirdupois of each of the two samples of leaves, separated from leaf-stalk and in coarse powder, and packed them in thin layers alternating with layers of fine sand in a percolator. f℥x of water containing 120 grains of caustic potash was poured upon them, and maceration allowed for 24 hours. The aqueous solution was then displaced by f℥viii of dilute alcohol (equal parts of rectified spirit and water), and maceration allowed for 24 hours more. The spirituous fluid was next displaced by water acidulated with sulphuric acid, and percolation continued as long as the running fluid possessed color. f℥xxii of very dark greenish-brown fluid was thus obtained. A little more acid was added to produce exact neutralization of the alkali, and the turbid fluid filtered. Chlorophyl and sulphate of potash, destitute of conia or any of its salts, remained on the filter. The filtrate was evaporated over a water bath at a temperature under °160 F., until about ℥v of dark brown extract, of treacly consistence, remained. While still warm, this was rubbed up with f℥v of solution of caustic potash (1 part (HO, RO), 3 parts (HO)). A very faint odor of conia was evolved. The mixture was transferred to a long tube, and shaken at intervals with an equal bulk of æther. The æther assumed a yellowish-green color. After 24 hours the ætherial solution was decanted, and the extract washed with fresh portions of æther as long as it continued to dissolve anything. The mixed æthereal solutions were then distilled. Half a grain of a clear, deep sap-green, thick, oily fluid, lighter than water, remained. It possessed a mint-like odor mixed with that of conia. To the tongue it was almost as bitingly acrid as conia itself, but in minute quantity it produced, like oil of peppermint, a cooling sensation. Its taste was bitter, and it possessed, in an intense degree, the nauseous flavor of the dried leaf or its tincture. It was in fact a mixture of conia and the oleo-resin of the plant, colored by chlorophyl. It imparted to water a strong

alkaline reaction. Mixed with water acidulated with sulphuric acid it refused to dissolve, but the aqueous fluid obtained a tinge of color, and, when evaporated nearly to dryness, a dark film of syrupy fluid remained, which, when mixed with a little solution of caustic potash, evolved a distinct odor of conia.

II. An ounce avoirdupois of the mixed leaves were taken and mixed with f℥vss of water and f℥ss dilute sulphuric acid P. B. Maceration was allowed for seven days at a temperature of 50° F. The fluid was then displaced by water. f℥x of bright sherry-colored infusion was thus obtained. This was neutralized exactly by HO, KO, and filtered. A modification of chlorophyl, which gave a deep yellow color with potash, and sulphate of potash, both free from conia or any of its salts, remained on the filter. The filtrate was treated as that of No. 1, and the extract in like manner supersaturated with potash and washed with æther: a little less than half a grain of bright pale greenish-brown oily matter remained. It possessed a powerful odor, compounded of conia and the peculiar odor of the leaves with a minty addition. It smelt more of conia and less of mint than the product described under No. 1. Its taste was intensely biting, like that of conia itself, leaving a flavor of tobacco and peppermint, and the rank taste of the dried leaves. Treated with sulphuric acid the oily fluid partly dissolved, and the filtered solution manifested a purple tinge on evaporation, and furnished a little brown syrupy extract, which, upon the addition of potash, evolved a strong odor of conia, a distinct trace of which was obtained from the mixture by the aid of æther.

It appears from the foregoing experiments that the dried leaves do, when carefully prepared and preserved, retain a trace of conia; and it is equally conclusive that the quantity is much too small to furnish an efficient preparation.

III. In order to make my investigation complete, I subjected the leaf-stalks—primary, secondary, and tertiary—to the same process as that described in No. 1. Taking the same quantity of the leaf-stalks, viz. ℥ii, I obtained as nearly as possible the same quantity of oily matter as from the leaves. Its physical and chemical properties were identically the same as those of the oily fluid obtained from the leaves.

It will be observed that I have not followed the usual process (that of distillation) for the extraction of conia in the above experiments. I have been induced to adopt the above method in order to prevent that decomposition of the alkaloid which takes place by prolonged heating with potash. If I had followed the prescribed processes, I should no doubt have been led to the same conclusion as Geiger, viz., that the dried leaves are destitute of conia.

I am now brought to the inquiry, What is the value of the *Cataplasma Conii*, P. B.? According to the most liberal computation it contains only half a grain of conia, and, as far as this principle is concerned, it may therefore be considered valueless. It is stated in Wood and Bache's "Dispensatory of the United States" that two or three drops of conia may be given in the form of enema.

Succus Conii.—I now turn to another preparation of conium, the *Succus Conii*. This is, indeed, a most worthy representative of the famous hemlock, as I have most satisfactorily proved by its effect upon myself and others.

The drug with which I commenced my experiments was prepared by Mr. C. F. Buckle, of 77 Gray's Inn Road. W. C. He has kindly furnished me with the following particulars respecting the herb and the preparation of the juice:—

"June 1, 1866.—Received from Mr. Gaines 56 lbs of *Conium maculatum* grown in Essex. The plants were fresh and fine, and just coming into bloom. The process of pulping between finely-grooved iron rollers was commenced at once; when complete, the pulp was subjected to the pressure of a very powerful hydraulic press, and 75 per cent. of juice obtained. This was immediately mixed with the proportion of spirit prescribed by the British Pharmacopœia, and the mixture set aside in a cellar. The whole of the process occupied ten hours, and was completed in one day. The mixture was subsequently filtered, as directed, and bottled off." The resulting preparation was of a dark sherry-color, possessed a delicate and agreeable herby taste and odor without acridity, and an acid reaction. Sp. g. 1002. f℥j yielded 30 grs. of extract, and 0·42 grs. of pure conia. Heated with a little caustic potash, it evolved suffocating fumes of conia. Heat,

alcohol, nitric acid, all precipitated albumen. The boiled and filtered juice gave reactions indicating the presence of sugar (in considerable quantity), soda, magnesia, lime, phosphoric acid (in considerable quantity), sulphuric acid (a minute proportion), chlorine. Bichloride of platium gave a muddy molecular yellow deposit; tannic acid, a fine flocculent precipitate; perchloride of iron caused a precipitate, but neither the per- nor proto-salts produced any discoloration.

Dec. 10.—At 11.30 A. M. I took f℥ii with a litte water. I remained quiet, and was engaged in close study all the rest of the day. No effect followed.

Dec. 11.—At 8.30 A. M. took ℥i of bicarbonate of potash in a large draught of water. At 10.30 A. M. took f℥iii of the succus, and went by railway into the City. On walking back again, about three-quarters of an hour after taking the conium, I suddenly felt a heavy clogging sensation in my heels, and as I went along I was satisfied that this was due to impairment of muscular power. After walking about a mile up-hill this sensation was very decided, and on putting a foot upon the scraper at the door of the hospital the other leg felt hardly sufficient to support me. It was a dark foggy day, and I could not test my vision for distant objects with any certainty, but on looking at a blazing fire at the distant end of the ward I felt giddy, and I seemed to want power in my eyes in order to fix my gaze firmly enough to get a good definition. I could not follow the rapidly shifting flames so as to clearly define one from another. I felt clumsy in my movements. I was quite sure of them, but I felt that I needed to make an effort to control my legs. By the time I had finished my visit (1 P. M.) these effects had completely passed off, and I walked away briskly a distance of two miles. The maximum effect was manifest about an hour and a quarter after taking the hemlock.

Dec. 13, At 11 A. M.—Took f℥iii of succus, and experienced the above-mentioned effects in only a very slight degree. The pulse and pupils remained natural. I was pretty actively engaged the hour following the dose.

Dec. 15, At 10.15 A. M.—Took f℥iv and immediately walked a distance of three miles. Felt a repetition of the symptoms which

I experienced on the 11th, after ʒiii of the juice. Three hours after taking the drug the symptoms had entirely passed off, and I felt as strong and active as I ever did.

Dec. 17, At 10.45 A. M.—Took fʒvss of the succus, having previously observed the pupils and the pulse, and continued moving about in a small room, arranging certain matters. I had forgotten the conium altogether, but was suddenly reminded of it by the occurrence of the following disorder of vision, which would, probably, be loosely called giddiness. It was what I might term voluntary giddiness,—a giddiness within my own control. So long as my eyes were fixed upon a given object, the definition and capacity of vision for the minutest objects were unimpaired; but the instant I directed my eyes to another object, all was haze and confusion, and, if standing, I felt giddy. As soon, however, as the eyes again rested upon an object, the confusion of vision and sense of giddiness instantly disappeared. It was clear to me that the adjusting muscular apparatus of the eye was enfeebled and its contractions so sluggishly performed, that they could no longer keep pace with those of the external muscles of the eye. Three-quarters of an hour after taking the conium this symptom suddenly appeared. At 11.45 (an hour after the dose) it was much increased: a general muscular lethargy affected me; the eyelids became so heavy that it required a considerable effort to raise them, and the implication of the third nerve was still further indicated by widely dilated pupils. I sat down to make these observations, and began to feel so oppressed with rapidly increasing muscular lethargy, that I got up and tried to shake it off.

At 12, noon, I first felt weakness in my legs, and then, as these symptoms were rapidly increasing and my vision was very much puzzled, I felt some alarm; at the same time the earliest beginning of the sensations of squeamishness and faintness, which tobacco produces on those unaccustomed to its use, came on. I sat down again once or twice, but I was afraid of maintaining this posture, for I felt that it would so much encourage the lethargy that it might get the better of me. I therefore walked about and tested the muscular power of my legs. At this time I was cold, pale, and tottering. The pulse, which had been con-

siderably excited by the sudden accesion of the foregoing symptoms, was now sixty-eight and quite regular. The sensation of nausea soon passed off, but the diminution of muscular power increased, and I felt that if this continued, my legs would soon be unequal to support me. I could still go up stairs awkardly, but the legs felt strangely light and powerless. The weakness was especially felt in the hamstring muscles. The mind remained perfectly clear and calm and the brain active, while the body seemed heavy and well-nigh asleep. There was, in fact, a direct diminution of power in all the voluntary muscles, almost amounting to paralysis; and of all the motor-nerves, the third was the earliest and most deeply implicated. The greatest exertion was at one time required to elevate the eyelids.

At 1.30 P. M.: pulse fifty-six; beginning to feel warmer; pupils less dilated; the heaviness of the eyelids and the voluntary giddiness diminishing; muscular power returning.

At 2.30 P. M.: all the symptoms had passed off. As in previous experiments, I totally abstained from all kinds of stimulants during the action of the medicine. At this time the urine was alkaline, from the effects of a dose of potash taken at 8.30 A. M. After luncheon I wrote letters till 4 P. M. and then walked briskly a distance of three miles. I abstained from stimulants all day, and finished the day's work by drawing a microscopic object.

A *second sample* of the Succus was obligingly sent to me by Messrs. Allen and Hanburys. Its sp. g. was 1015, the greater density being chiefly, if not altogether, due to the larger proportion of albumen and sugar. In all other respects the Succus corresponded with that already described.

Dec. 24.—N. P., a young woman of average health and strength, took f℥j. Excepting a slight feeling of nausea, no effect followed.

Dec. 28.—She took f℥j and ♏xl of the Succus. No effect followed.

Dec. 28.—She took f℥iij. Within half an hour she became giddy and tottering. The muscular weakness increased, and during the next half-hour she was hardly able to walk. At the end of an hour the symptoms began to subside, and two hours

and a half after taking the dose they had wholly passed off, leaving her in her usual health.

A *third sample* was kindly forwarded to me by Messrs J. Bell and Co. The sp. g. of this preparation was intermediate between that of the first and second samples, viz. 1005. It contained less albumen than either. In all other respects it agreed with the other samples, and furnished the reactions above mentioned. It was prepared June 3, 1863.

Dec. 28.—N. D., a rather delicately-constituted young woman, took f℥ij of this Succus. No efforts followed, but she vomited an hour afterwards. This was probably due to other causes.

Dec. 29.—Took f℥iv. About twenty minutes afterwards she experienced nausea, and became giddy and unable to walk. An hour after taking the dose there was nearly complete muscular paralysis, the eyelids were closed, and the pupils widely dilated. The mind was perfectly calm, clear, and active, and she tried without success to raise her eyelids when I requested her to do so; the pulse and respiration were normal. The former had been accelerated at the outset of the symptoms. The surface was warm. The maximum effect was produced about an hour after taking the medicine. She remained in the state above described about three-quarters of an hour. The symptoms then subsided almost as rapidly as they came on, and three hours after taking the dose she was able to walk about as actively as ever, and attend to her duties. Next day, she complained of a slight pain in the legs.

From the above investigations, it is conclusive that the Succus of the British Pharmacopœia possesses in an eminent degree the poisonous properties of the hemlock. The experiments with the third sample are peculiarly valuable, as they show that the preparation undergoes no change by keeping. Having thus distinguished the *Succus* from the inert tinctures, I trust that these will henceforth be excluded from the Pharmacopœias, and that medical practitioners will rely solely upon the Succus, which, in the compactness of the dose required, in absence of any objectionable taste and odor, and in the potency and certainty of its operation, leaves nothing to be desired.

As a substitute for the *Cataplasma Conii*, P. B., a piece of

lint saturated with the *Succus*, or, if heat and moisture be required, a bran poultice containing an ounce or an ounce and a half of the *Succus*, may be used.—*London Pharm. Journ.*, *April*, 1867.

78, *Upper Berkley Street, W.*

(To be continued.)

"STYPTIC COLLOID." A NEW STYPTIC AND ADHESIVE FLUID.

By Benjamin W. Richardson, M. A., M. D., F. R. C. P.
(Senior Physician to the Royal Infirmary for Diseases of the Chest.)

[The lecturer states that he experimented with the view of improving upon Pagliari's styptic, a formula for which is given in the U. S. Dispensatory, 12th Edit., page 166. From his statements, most of which are chiefly interesting to surgeons only, we extract merely those of value to the pharmacist, prefacing that by *absolute* alcohol and *absolute* ether in the following formula, stronger alcohol and stronger ether of the pharmacopœia are undoubtedly meant.]

"The process of manufacture of the fluid is tedious, but sufficiently easy. The object to be aimed at is to saturate ether entirely with tannin and a collodial substance, xyloidine or gun-cotton. In the first step of the process, the tannin, rendered as pure as it can be, is treated with absolute alcohol, and is made to digest in the alcohol for several days. Then the ether, also absolute, is added until the whole of the thick alcoholic mixture is rendered quite fluid. Next the collodial substance is put in until it ceases readily to dissolve. For the sake of its very agreeable odor, a little tincture of benzoin is finally admixed.

"The solution is now ready for use. It can be applied directly with a brush, or, mixed with equal quantities of ether, it can be applied in the form of a spray. In order to give to the fluid a short name by which it may be known, I have called it '*styptic colloid.*'

"*Properties.* When the solution is brought into contact with an open surface of the body, the resultant phenomena are these: the heat of the body gradually volatilizes the ether and alcohol, and the tannin and cotton, as the ether leaves them, are

thus left stranded on the surface in intimate combination. In proportion as the ether passes off, the blood or the secretion of the surface permeate the tannin and cotton; but tannin acts directly upon albumen, coagulating it, and transforming it into a kind of membrane, almost like leather. The cotton meanwhile unites the whole, gives substance to the mass, and adhesive quality. When all is solidified, the dressing becomes, in fact, a concrete, having a true organic hold or basis on the tissue; and as the tannin, if the solution be freely applied, is in excess, any new exudative matter or blood is for several hours taken up by it, and the annealing is made the more complete.

"Thus by this dressing, the air is excluded from every possible point in every possible direction, not by a mere septum, but by the combination of the animal fluids with the remedy; and because the air is excluded and fluid is absorbed there is no decomposition—*i. e.* no oxidation; and because there is no oxidation there is no irritation.

"The styptic and adhesive qualities of this fluid are easily demonstrated by observing its direct action on blood, on serum, on pus, on albumen. You will see that it solidifies all these by mere contact with them.

"To these properties I must also add that of complete deodorization. Here is putrid blood, here putrid ovarian serum, here putrid purulent substance. They are unapproachable when laid on an open surface, but we bring them into contact with the solution, and they are deodorized. Further, the decomposed substance is fixed by the tannin and rendered inert.—*Med. Times and Gaz.—Dental Cosmos, June,* 1867.

PRESERVATION OF SULPHURETTED HYDROGEN SOLUTION IN THE LABORATORY.

At the last meeting of the Pharmaceutical Society of Paris, M. Lepage, of Gisors, brought forward a process which he has adopted for preserving solutions of sulphuretted hydrogen. All chemists know that this useful reagent cannot be preserved long in aqueous solution. The author has adopted for some years an artifice which enables sulphuretted hydrogen solution to be kept for twelve or fifteen months with scarcely any loss

of strength. Instead of using water, he saturates a mixture of equal parts of pure glycerin and water with sulphuretted hydrogen gas, and uses it in the ordinary manner. None of the reactions are interfered with in the least, whilst the solution possesses almost perfect stability. The dilute glycerin dissolves less gas than distilled water will; representing the solubility in the latter liquid by 100, that in the former will be 60.

Glycerin likewise prevents solution of sulphide of ammonium from becoming colored, and M. Lepage believes that it has a similar action on the sulphides of potassium and sodium.—*The Chemical News, May*, 1867.

DRILLING GLASS.

To the Editor of the *Chemical News*.

Sir,—In the *Chemical News* of April 19 there is a description, by Mr. Spencer, of the old and well-known method for drilling glass by means of a file wetted with oil of turpentine. Some years ago I read in a German periodical of another means for the same purpose—viz., dilute sulphuric acid—and I found it, on trial, to answer much better than the first. Not only, it appears, is the efficacy of the cutting tool more increased by sulphuric acid than by oil of turpentine, but also, strange as it seems, the tools (files, drills, &c.) are far less rapidly destroyed by being used with the acid than with the oil. I also found it stated that, in the engineering establishment of Mr. Pintus, at Berlin, glass castings for pump barrels, &c., were drilled, planed, and bored just like iron ones, and in the same lathes and machines, by the aid of sulphuric acid. As to drilling, I can fully testify to the efficacy of that method. Whenever I want, say, a hole in the side of a bottle, I send it, along with some dilute (1 : 5) sulphuric acid, to the blacksmith, who drills in it, with a hand brace, a hole of $\frac{1}{4}$ inch diameter. This hole is then widened to the required size by means of a triangular or round file, again wetted with the acid. I also find a great help in the latter when making graduations on litre flasks, &c. There is hardly any smell perceptible during the work, which proves how little the acid acts upon the tools, undoubtedly owing to their

being tempered; but each time after use I take the precaution to wash and dry the files at once, and I have so far observed no sensible deterioration in them. Hoping this little hint, may be useful to some of your readers, as it has been to me,

I am, &c.

G. LUNGE, Ph. D.

South Shields, April, 1867.

The Chemical News, May, 1867.

Varieties.

Writing and Copying Ink.—Dissolve ½ oz. of ext. logwood in half a bottle (?) wood vinegar, filter, and add half a bottle distilled water. The steel pens furnish the iron requisite for the black-bluish color.—*Archiv d. Pharm.* 1867, Jan., 56.

Violet Ink.—Two drachms extract of logwood are dissolved in half a bottle wine vinegar, filtered, diluted as before, and twenty grains acetate of manganium added.—*Ibid.*

Red Sealing Wax.—No. 1. Shellac, Venice turpentine, Chinese vermillion, of each eight ounces, benzoin two ounces, white bole or marble dust two ounces, one drachm oil of lemon.

No. 2. Shellac, Venice turpentine, of each three ounces, vermillion, red bole, of each four ounces, benzoin two ounces, oil of lemon one drachm.

No. 3. Shellac, Venice turpentine, of each eight ounces, vermillion, talc, of each four ounces, dragon's blood, benzoin, each one ounce.

Extra fine. Dammar, bleached shellac, vermillion, of each twelve ounces, Venice turpentine four ounces, oil of lemon one drachm.

Common. Dammar, rosin, of each eight ounces, turpentine, red lead, chrome red, of each four ounces.—*Ibid.*

Jockey Club.—Essence de violet, de jasmin, *aa* thirty p., vanilla one-half part, oil of patchouly one-fourth part, otto of rose one part, in thirty parts alcohol.

Spring Flowers.—Ambergris one-eighth part, twenty tincture of orris root, one-half oil of bergamot, one-eighth part otto of rose, in three parts alcohol.—*N. Jahrb. f. Pharm.*, 1866.

Judkins' Ointment.—Mr. J. B. Baxley, of Baltimore, sends the following

recipe for the preparation of a nostrum which was formerly protected by letters patent, and which in some parts of the country is still much used. The formula was obtained from the Patent Office.

Take of	linseed oil,	lbj.,
	red lead,	℥iv.,
	spirits turpentine,	℥ss.,
	sugar of lead,	℥j.

The oil is first boiled in an earthern pot, after which the red lead is gradually added; finally, the other ingredients.

Bon de Rabais.—Hager's Pharmaceutische Centralhalle, 1866, No. 38, states: L'Etincelle is a daily paper published in Paris, containing, besides a novel, stale anecdotes; price of each number five centimes. Not paying any stamp tax, it is not authorized to accept advertisements; but it aims to increase its sale in a reprehensible way totally unknown here. Each number contains at the end a list of bakers, butchers, liquor-dealers, grocers and pharmaciens who sell *L'Etincelle;* attached to this list are five bonds, one for each avocation. The bond for the apothecary reads thus:

Journal L'ETINCELLE (Juillet) Valable de 23 au 24.

Pharmacie.

BON DE RABAIS.

Toute personne qui présentera avec le présent Bon chez l'un des adhérents cicontre désignés, aura droit à un rabais de 15 p. c. sur touts ses achats.

MASSON,
Directeur.

The list comprises twenty-nine pharmacial establishments in Paris.

This "beats" the gift lotteries, for patriotic and other purposes, of our country.

Paris Exhibition.—The following is a list of jurors and associates appointed for the various classes in which our readers are likely to take most interest: Class 7. Paper stationery, binding, painting and drawing materials; juror, Mr. Warren De la Rue, F.R.S.; associate juror, Mr. F. Hankey. Class 9. Photographic proofs and apparatus; juror, Dr. Hugh W. Diamond; associate juror, Lieutenant Colonel Gordon, C.B., R.E. Class 11. Medical and surgical instruments and apparatus; juror, Sir J. F. Olliffe, M.D. Class 12. Mathematical instruments and apparatus for teaching science; juror, Mr. C. Brooke, M.A., F.R.S.; associate juror, Lieut. Col. Strange, F.R.S., F.R.A.S. Class 24. Apparatus and processes for heating and lighting; juror, Prof. J. Tyndall, LL.D, F.R.S.; associate juror, Rear Admiral Ryder, C.B., R.N. Class 25. Perfumery; juror, Dr. W. Odling. Class 36. Jewelry and precious stones; juror, Earl Dudley; associate juror, Mr. N. H. M. S. Maskelyne. Class 40 Mining and metallurgy; juror, Mr. S. H. Blackwell; associate juror,

Capt. W. S. Roden. Class 41. Products of the cultivation of forests, and of the trades appertaining thereto; juror, Hon. F. D. M'Gee; associate juror, Mr. P. L. Simmonds. Class 43. Agricultural products (not used as food) easily preserved; juror, Mr. D. Hanbury; associate juror, Dr. T. Thomson, F.R.S. Class 44. Chemical and pharmaceutical products; juror, Dr. Frankland, F.R.S.; associate juror, Dr. David Price. Class 45. Specimens of the chemical processes for bleaching, dyeing, printing and dressing; juror, Sir Robert Kane, F.R.S.; associate juror, Dr. David Price. Class 47. Apparatus and processes of the art of mining and metallurgy; juror, Mr. W. W. Smyth, M.A., F.R.S., Pres. G.S.; associate juror, Mr. C. Le Neve Foster. Class 51. Apparatus used in chemistry, pharmacy, and in tan yards; juror, Dr. Lyon Playfair, C.B., F.R.S.; associate juror, Prof. T. C. Archer. Class 59. Apparatus and processes used in paper making, dyeing and printing; juror, Mr. Wyndham S. Portal. Class 64. Telegraphic apparatus and processes; juror, Mr. C. Wheatstone, F.R.S.; associate juror, Lord Sackville Cecil. Class 67. Cereals and other eatable farinaceous products, and the products derived from them; juror, Mr. J. Druce; associate juror, Mr. C. Woolloton. Class 72. Condiments and stimulants; sugar and confectionery; juror, Mr. G. Moffatt, M.P. Class 73. Fermented drinks; juror, Hon. H. G. Howard; associate juror, Mr. E. L. Beckwith.—*Chem. News, London*, April 5, 1867.

The Pithiest Case on record. Before the Supreme Court of Ohio. Elijah Patrick vs. Wm. S. Merrill & Co.—This is a case involving more pith, without doubt, than any case ever reported. In fact, it is founded on nearly one ton of the article, and at the same time exhibits one of the strangest blunders ever made.

The suit is brought to recover some $5,400 for 1600 pounds of sassafras pith, which the plaintiff alleges he contracted to deliver, and did deliver, to defendants in December last, at $3.50 per pound.

The defendants deny any contract whatever, but admit that they agreed to buy certain articles in the way of barks, roots and herbs, and gave Mr. Patrick a list of the articles they would buy.

The plaintiff's testimony elicited rounds of laughter, which were not frowned upon either by the Court. The ludicrousness of the matter appears when it is known that the utmost possible demand for such an article by the defendants, who are wholesale druggists, is about ten pounds a year, at which rate it would require one hundred and sixty years to consume the amount.

The plaintiff says he stopped to see Merrill, who was an old friend, and asked him if he wanted any barks or herbs. The old man was not in, but the son was. He continued:

Merrill got a paper with a list of various articles named on it, and said that he would mark certain articles which he wanted, and set the price

opposite. Such articles as he wished to limit as to quantity, he would put the amount. The time agreed to bring it in was about the first of December, when ginseng was brought into market. When we came to sassafras bark, the witness said, he limited me to five thousand pounds, and marked the price thirteen cents per pound.

The next article was sassafras pith; in this article he didn't limit me as to quantity, but put down the price at $3.50 per pound. I remarked that I never knew of its being used. He said it was a good thing, and very scarce. I told him I would get all I could for him, and he didn't limit me as to the amount, but told me to get what I could. At the same time I requested that he would give me the exclusive right in that part of the State. This he agreed to.

I went home and told all my clerks to make proposals to the people for sassafras pith; and on three proposals the pith began to come in, and long before the time, I had collected between 1700 and 1800 pounds of the article, and I have $400 or $500 worth at home now.

He brought it down the Big Sandy and the Ohio to Cincinnati, in two or three flatboats, and notified Merrill of its arrival.

Q. Did Merrill send for it?

A. Yes; he sent down his drays and had it hauled up and piled before the door of his drug store.

Q. Was there a pretty good pile of it?

A. I should think there was a pile about as big as this room before the door. [Laughter.] I told Mr. Merrill I had more at home, and asked if I should send it.

Q. What did he say to that?

A. He said, yes, send it on, all except the *pith*. He thought he had enough *pith*. [Laughter.]

Q. Did he pay you for the pile?

A. No. When I called to get my money he refused to pay for the pith, but was willing to pay for the other articles.

The younger Mr. Merrill testified that he did not consider the paper a contract, and so told Mr. Patrick at the time. He said he told him they only wanted a little of the pith.

Wm. S. Merrill was sworn, and testified that his son told him that Mr. Patrick had reached the city with an unheard of quantity of sassafras pith; more than could be sold in all time. As an illustration, the witness said, some years ago, he had engaged with a man in South Carolina to send him five pounds of sassafras pith, for which he would pay $2 50 per pound. Instead of five, the man shipped fifty pounds; he paid him for five pounds, and wrote to him that he would keep it in store until he could dispose of it; if he could not sell it by wholesale, he whould take out five pounds as he needed it, and pay for that amount as it was taken out of the barrel. It requires many years to get through the fifty pounds in this way.

Judge Storer asked Mr. Merrill how much he thought might be sold by his house during a year. He asked this question in view of a calculation he was making.

Witness answered, "Probably as much as ten pounds; that would be a high estimate."

The Judge said by a careful calculation he found it would take one hundred and sixty years to dispose of the pith.

The case was taken under advisement.

[It was called up again on the 20th of June, but not concluded.]

An Important Discovery.—The *Pall Mall Gazette* has the following announcement: "A discovery, of at least a vital importance for Egyptology as the celebrated Rosetta stone itself, was made about three weeks ago by a party of four German explorers—Reinisch, Rosler, Lepsius, and Weidenbach—at a place called Sane, the whilom Tanis, the principal scene of Rameses II.'s enormous architectural undertakings. A stone with Greek characters upon it was found protruding from the ground, and when fully excavated proved to contain a bilingual inscription in no less than thirty-seven lines of hieroglyphics and seventy-six lines of Greek, in the most perfect state of preservation, and dating from the time of the Ptolemy, Euergetes I., in 238 B C. The stone measures two metres twenty two centimetres in length, and seventy-eight centimetres in width, and is completely covered by the inscriptions. Their first attempts at editing this important inscription having failed, the travellers returned to the spot, and during a stay of two days, the 22d and 23d of April, copied the inscription most carefully, and photographed it three times. The next post will bring particulars as to the contents, and copies of the documents itself."—*Drug. Cir. & Chem. Gaz.*, Sept. 1866.

Glycerin in the Arts.—A German chemist named Pusher, a native of Nuremberg, reported to the Trades Union of that place, that he met with great success in using glycerin together with glue. While generally, after the drying of glue, the thing to which it is applied is liable to break, tear, or spring off, if a quantity of glycerin, equal to a quarter of the quantity of glue, be mixed with it, that defect will entirely disappear. Pusher also made use of this glue as lining for leather, for making globe frames, and for smoothing parchment and chalk paper. He also used it for polishing, mixing wax with the glycerin, and using it as an underground for laying on aniline red color. The red was found to exceed all others in which glycerin is not used. The glycerin has also some properties in common with India rubber, for it will blot out pencil marks from paper, so as to leave no mark whatever.

A paste made of starch, glycerin, and gypsum will maintain its plasticity and adhesiveness longer than any other known cement, and does therefore recommend itself for cementing chemical instruments, and apparatus used by pharmacists.—*Journal of Applied Chemistry.*

NOTICE.

American Pharmaceutical Association.

Notice is hereby given, that the Fifteenth Annual Meeting of the American Pharmaceutical Association will be held in New York city, commencing at 3 o'clock, P. M., on the second Tuesday in September (10th), 1867.

A suitable room has been secured by the local secretary, in the University Buildings, on University Place, corner of Waverly Place.

Aside from the importance of the reports to be submitted, it may be of interest to the Association to know that several of our members, now abroad, will act as delegates of the Association to the International Congress of Pharmaceutists at Paris, August 21, and will return in time to be present at the session in New York.

A cordial invitation is extended to all engaged in trade or manufactures connected with pharmacy, to send specimens of their stock or products for exhibition during the session.

These may be sent to P. W. Bedford, Secretary of the American Pharmaceutical Association, University Buildings, New York city, notifications to that effect being addressed to him in advance, by mail, to 709 Sixth Avenue,

FREDERICK STEARNS,
President of the American Pharmaceutical Association.

Detroit, May 15, 1867.

Editorial Department.

Professional Education.—The delegates of most medical colleges of the country met on the third day of May, at the city of Cincinnati, and, after mature deliberation, passed a series of resolutions with regard to the professional education of medical students, of which we give merely the following outlines:

1. Every applicant for matriculation must prove, either by a satisfactory certificate or by a direct examination, that he possesses a thorough knowledge of the common English branches of education, including the first series of mathematics, and sufficient knowledge of Latin and Greek to understand the technical terms of the profession.

2. The student is required to study four full years, and to attend three regular courses of College instruction.

3. The minimum duration of an annual lecture term is six calendar months.

4. Every medical college should embrace in its curriculum at least thirteen professorships, to be taught by not less than nine professors. These branches are to be divided into three groups or series, named the freshmen, junior, and senior series. The student is required to attend these successively, one each year; he will have to submit to an examination at the end of each term, and is not permitted to attend the next series until he has become proficient in the previous ones.

5. At the close of each session, the student is to receive a certificate specifying the time and the courses of instruction actually attended.

6. The definite action of the medical colleges on these propositions is solicited.

The action of this Convention was emphatically approved by the American Medical Association.

Restricting the professional student to an attendance upon certain branches, and progressing with the same in accordance with the knowledge actually acquired, is a step in the right direction, and one which deserves to be followed by every professional college. M.

Summer Courses.—We believe that it is only at St. Louis and Philadelphia where, during the spring and summer, lectures are now delivered in conformity with the requirements of the respective Colleges of Pharmacy. In both cities botany is taught during the season most propitious for a practical study of this science. Our friend Prof. Mayer, of the New York College of Pharmacy, gives similar instruction there. We believe that it would be productive of good if that College would likewise *recognize* the importance of the same, notwithstanding, perhaps, the time may not have arrived yet when a knowledge of botany will be considered as imperatively requisite for graduation.

Since the beginning of April, Prof. Maisch has been delivering lectures on General and Special Morphology, Organology, and Systematic Botany, practically illustrated by excursions into the surrounding country. The average attendance is about eighteen, but very few of the graduates of the College participating. It is not improbable that this meagre attendance, out of a class of about one hundred and sixty last winter, is partly caused by the impossibility of the young men to be absent from the business during an afternoon; but we feel convinced that a spirit of greater liberality would prevail among the employers if they fully understood the importance of botany to the practical pharmacist, and if the young men themselves fully realized the advantages which may be derived from a familiarity with this discipline.

It behooves us, in this connection, to notice the endeavor of the New York College to have the lectures during the coming winter delivered in the day-time. The advantages gained thereby for the instructor and the instructed are obvious, if we merely take into consideration the importance of recognizing *colors* in preparations and experiments. May they meet

with the success which, in our estimation, the movement fully deserves, and may pharmaceutists realize the fact that, with the rapid progress made in the pharmaceutical education of our country, the time is fast approaching when extended facilities for studying, and an extension of time, may be necessary to keep American pharmacy on a level with the progress made in all departments of science.

The Massachusetts College of Pharmacy.—At the annual meeting of the College, held in Boston on Monday, the 4th ult., the following list of officers was chosen for the ensuing year:

Thomas Hollis, President; Charles A. Tufts and S. M. Colcord, Vice-Presidents; Henry W. Lincoln, Recording Secretary; Geo. F. H. Markoe, Corresponding Secretary; Ashel Boyden, Treasurer; Elijah Smalley, Auditor; D. Henchman, J. S. Melvin, A. P. Melzar, G. D. Ricker, J. A. Gleeson, A. G. Wilbur, John Butterworth, and Edward H. Perry, Trustees.

The death of Mr. Thos. Farrington, a venerable and useful member, was noticed by a series of appropriate resolutions.

Since the meeting took place, we have been informed that arrangements are being made for the delivery of lectures in two or three of the branches most essential for a sound pharmacial education. We hail this undertaking with delight, and feel assured that ultimate success will not be wanting. The gentlemen whose names have been mentioned in connection with the lectures are energetic and enthusiastic in the cause of pharmacy; let them not be deterred from the good work, if, in the beginning, the results should not quite come up to their expectations. Boston, with the cities immediately adjoining her, should certainly be a field large enough to sustain a College of Pharmacy, even if she was to receive but a meagre support from other parts of New England. In order to raise pharmacy to the position which ought to be occupied by her, a thorough scientific and practical education is indispensably requisite. With the multiplication of the Colleges, and their establishment upon a firm basis, the young follower of pharmacy will soon be without a valid excuse for non-attendance of lectures, and for not procuring the highest title at present in the gift of our Colleges,—that of *Graduate in Pharmacy*. M.

Donations to Colleges of Pharmacy.—With a commendable spirit of enterprise, the Chicago College of Pharmacy seem to be determined to use every effort to succeed in their undertaking. In a circular issued in April they say:

"The College of Pharmacy of this city is now endeavoring to supply itself with a complete cabinet of specimens of Drugs, Chemicals and Pharmaceutical Preparations; also, one of Mineralogy and Natural History, with a suitable Library and the necessary Chemical Apparatus to establish the College as a permanent educational institution, where the young men of the West may obtain a thorough knowledge of the art of

Pharmacy,—so important to the druggist, the physician, and the public. * * We want specimens in materia medica, botany, chemistry, mineralogy, books and chemical apparatus. One or many will be thankfully received, and promptly acknowledged. Duplicates will do no harm, and may be very useful.

Similar wants are probably felt, more or less, by every College of Pharmacy. Keeping in view the tendency of modern medicine to simplicity of remedies and preparations, the discarding of old and the introduction of new remedial agents, cabinets of materia medica and of pharmaceutical preparations may perhaps never be considered as complete. A cabinet of chemical apparatus is very desirable, but of equal, if not greater importance, is a cabinet of pharmaceutical apparatus and utensils. The appeal of the Chicago College to the friends of pharmaceutical education would probably be endorsed by all her sister institutions. M.

THE NEW MEDICAL LAW OF MARYLAND.—The General Assembly of Maryland passed in January, 1867, *an act for the protection of the public against medical imposters, and for the suppression of the crime of unlawful abortion.* It creates "the Medical Faculty of the State of Maryland," which consists of all physicians in Maryland who are *bona fide* graduates of some respectable Medical College, and have been licensed by the Board of Examiners established by this Act. While it does not recognize any particular school, the law peremptorily requires a good medical education before any one is allowed to practise medicine; and in consequence thereof the self-styled doctors will hereafter find Maryland a rather unprofitable locality for their wondrous cures, if the law is faithfully carried out. We hope that our pharmacial friends in Maryland will not allow the subject to rest here, but endeavor to increase the safeguards to the public, and to protect themselves by the passage of a similar law relating to pharmacists.

The present law does not affect the true pharmacist; it strikes, however, a heavy blow at the venders of such delectable nostrums as golden pills, &c., by the following:

Sec. 16. *And be it enacted*, That any person who shall knowingly advertise, print, publish, distribute or circulate, or knowingly cause to be advertised, printed, published, distributed or circulated, any pamphlet, printed paper, book, newspaper notice, advertisement or reference containing words or language, giving or conveying any notice, hint or reference to any person, or to the name of any person, real or fictitious, from whom, or to any place, house, shop or office, where any poison, drug, mixture, preparation, medicine or noxious thing, or any instrument or means whatever, or any advice, direction, information or knowledge may be obtained for the purpose of causing the miscarriage or abortion of any woman pregnant with child, shall be punished by imprisonment in the penitentiary at hard labor, for not less than three years, or by a fine of not less than five hundred nor more than one thousand dollars, or both, in the discretion of the Court, and in case of fine being imposed, one-half shall go to the informer.

The General Assembly of the State of Rhode Island passed about the

same time an Act for preventing criminal abortion, which contains in Section 3d the same clauses, and almost in the same words.

May the laws enacted by those two States not be allowed to become dead letters on the respective statute books, and may all the other States of our Union adopt, without unnecessary delay, similar stringent measures for the protection of the public and the prevention of crime! M.

MISTAKES.—Several mistakes which have been made within a few months past, by apothecaries in different parts of the country, have become public through the medical journals. None is as painful as the one which occurred about the middle of May, in Brooklyn, N. Y. According to the Brooklyn Eagle of May 17th, P. A. Schwartz, a clerk in a store on Atlantic street, was requested to copy the following prescription, which had been previously put up at this store:

℞. Quiniæ sulph. ʒss.
Ext. Nuc. Vom., gr. i.
M. ft. pil. No. xv.
Dose: one pill every two hours.

He wrote for Quin. Sulph. ʒss., Ext. Nuc. Vom. ʒj., &c., and this prescription was put up by Richard Somers at a store in Montague St. The patient, a lady, took one pill, and died in the course of a few hours. It is unnecessary to make any comment on such gross carelessness; but is it not time that pharmacists, as well as the public at large, should wake up to the necessity of requiring the strict education of every dispenser of medicine? The educated pharmacist *must* know that 4 grains of ext. of nux vom. of our pharmacopœia is a poisonous dose, and that he has no right to put it up without previously consulting the prescriber.

The victim is dead, and the daily press has had food for some editorials on the incapability of drug clerks, without suggesting the only practical remedy of such crying evils,—namely, a sound professional education.

Recently, after the explosion of a steam boiler in this city, involving the loss of over thirty human beings, and in consequence of this fearful slaughter, much virtuous indignation was expressed by the newspapers regarding the employment of incompetent engineers, and it was urged that a law be passed by the Legislature forbidding the employment of any one as engineer unless he has passed a stringent examination before a Board appointed for that purpose. We do not wish to discuss the merits of such a proposition, but merely desire to ask whether, in city and country, the lives of thousands of persons are not, every day, virtually in the hands of ignorant pretenders, who, without sufficient education, assume to prescribe and dispense medicines, of the power of which they have merely some indistinct idea? and is a catastrophe excusable because, in its very nature, it cannot assume such gigantic proportions as the explosion referred to before; while, on the other hand, the wrongs of omission and commission may be of more frequent occurrence?

The agitation for medical reform is progressing; Maryland has taken

one step in the proper direction. Let physicians and pharmacists unite their efforts, that the public be protected in their lives, by requiring the least that can be expected of prescribers and dispensers of medicine, who daily hold the lives of the invalids in their hands: namely, a *sufficient education.* M.

Third Annual Report of the Alumni Association of the Philadelphia College of Pharmacy. Philada., 1867.

The meeting of this Association took place on the 14th and 15th of March. During the sessions, twenty-four gentlemen were elected members. The election of officers resulted in the choice of Mr. Thomas S. Wiegand, President, Chas. L. Eberle and Ferris Bringhurst, Vice-Presidents, William C. Bakes, Recording Secretary, Adolph W. Miller, Corresponding Secretary, S. Mason McCollin, Treasurer, and an Executive Board consisting of Messrs. Henry Bower, W. Walter Mullen, T. M. Newbold, Jos. P. Bolton, Milton Huber, James Buckman.

We regret that the expectations in regard to the fund for the establishment of a practical department in connection with the College, have not yet been realized. Subscriptions amounting to $3990 have been received, leaving a balance of over $6000 to be raised to increase the amount to the proposed sum of $10,000. We hope that all interested in the welfare of the College will feel a pride to contribute; for to keep pace with the rapid progress of pharmacial science, a laboratory is absolutely necessary, and we think the time not far distant when a botanical garden will be needed for the use of the students in acquiring a practical knowledge of living medicinal plants. We endorse Mr. Bakes' appeal: "Will the graduates lend a helping hand to place our time-honored institution in a position of increased usefulness?" M.

Proceedings of the Massachusetts College of Pharmacy, &c.—During the agitation in the State of Massachusetts last winter, for the enactment of a license law for the sale of spirituous liquors, the Massachusetts College of Pharmacy decided not to sign, as a College, a petition for or against such a law; the committee of the College, however, drew up the following petition:

To the Honorable the Senate and House of Representatives of Massachusetts in General Court assembled:

The undersigned, officers and trustees of the Massachusetts College of Pharmacy, an institution acting under a charter from the State of Massachusetts for the purpose of promoting the best interests of legitimate pharmacy, and all of us actively engaged as dispensing apothecaries, respectfully represent, that alcohol, wines and other liquors are officinal articles in the pharmacopœias of all countries, and without which no apothecary could pursue his business; that the use and sale of these articles in the composition of medicine, and for medicinal purposes, constitute a large item in our business; that it is not our practice nor desire in any way to sell them to be used for purposes of mere luxury, or to allow them to be drank on the premises, but on the contrary we desire that the business of apothecaries should be so conducted as not to confound it with

that of common retailers of drink; that as a profession, we ask only to be protected as legitimate pharmaceutists in the transaction of our necessary and appropriate business; that under the present statutes it is impossible for us to conduct our business and perform our duties to the medical profession and the sick.

Now, therefore, in view of the above statement of facts, we most respectfully petition your Honorable bodies to alter the present law in such a way that apothecaries may be able to conduct their business in a legal manner.

At the special hearing of the witnesses of the College before the Committee of the Legislature, Mr. Colcord presented a memorial, setting forth with great force "the apothecaries' views of this great question of the use and sale of wines and spirits for medicinal, chemical, mechanical and manufacturing purposes," and containing the substance of the testimony to be given by them.

We regret that our limited space will not permit us to give even an outline of this memorial, or the able argument of Mr. Colcord, nor of the testimony produced; we must content ourselves with extracting from the evidence a few cases, showing to what injustice our brethren in Massachusetts were subjected through a spirit of persecution, under the prohibitory law of that State:

Hon. John A. Andrew stated that Mr. Royal Whiton, of Hingham, an apothecary and a strong temperance man, had been prosecuted and fined for selling spirits of camphor.

Mr. Wm. T. Rand, of Dedham, was prosecuted and fined for selling liquor on the prescription of a physician, to deliver which he had got out of bed at midnight; and he relinquished the business so as not to violate the laws of the Commonwealth.

Charles C. Bixby, an apothecary in North Bridgewater for the past fifteen years, said that he did not think he could do justice to his business and to the community without selling wines and spirits. He had sold California wines, and after a year or two he was notified by the officers to discontinue their sale, which he did. Soon after he was warned to appear before a Justice for selling liquor in violation of law, and one man testified to having bought a bottle of whiskey from him for medicinal purposes, nearly a year ago, and he had heard lately that it had not been half used up; and another man came to him, after having been to the town agent for some wine ordered by a physician, and, being unable to obtain it from the agent, he sold it to him; and another testified to having bought alcohol to burn in a lamp—and upon this testimony he was convicted and fined fifty dollars and costs as a "common seller." The wine which he sold was for a lady dangerously sick, and who died two days after.

We conclude our report on this subject—at once interesting and of vital importance—with Mr. Colcord's eloquent remarks, which apply with equal force to the United States Internal Revenue Law, by virtue of which pharmacists are allowed to sell fermented liquors *only* on physicians' prescriptions:—"*If I know the sentiments of our profession, all reliable pharmaceutists will place themselves unmistakably upon the side of law and order, whatever may be the consequences to the medical profession and the community.*" M.

An inquiry into the origin of modern Anæsthesia. By the Hon. Truman Smith. Hartford, Brown & Gross.

The author has been very active in presenting the claims of the late Dr. Horace Wells to the honor of the discovery of anæsthesia, before a committee of the U. S. Senate in 1852. The present work is made up chiefly from a series of communications to the Medical and Surgical Reporter. The author has been very earnest in his endeavors to sift truth from pretension, and proves, in our opinion beyond the shadow of a doubt, that on the 10th of December, 1844, Horace Wells, then a dentist at Hartford, Conn., conceived the idea of rendering himself so insensible by the inhalation of nitrous oxide, that he could have a tooth extracted without pain, and that he proved it on the following day by experimenting on himself. It was not until the 30th day of September, 1846, that W. T. G. Morton, a dentist of Boston, Mass., used ether for the first time, for the same purpose. We commend this volume to the careful perusal of all who feel an interest in the great discovery of the unfortunate Dr. Wells. M.

Why not? A Book for every Woman. The prize essay to which the American Medical Association awarded the gold medal for MDCCCLXV. By Horatio Robinson Storer, M.D., of Boston. Boston, Lee & Shepard, 1867.

This little book is "issued for general circulation by order of the American Medical Association;" and it deserves to be read not only by every woman, but likewise by every man, and particularly by every pharmacist. It presents the subject of forced abortion in a calm, but earnest manner, and shows it to be a crime against the infant, its mother, the family circle and society; it treats of the excuses and pretexts that are given for the act, discusses its frequency, and points out the measures of relief. We have noticed with satisfaction that the discussion on this subject is kept up in medical journals, and believe that beneficial results would be obtained if it was discussed also in pharmacial circles. It is a well known fact that there are certain quacks,—for physicians they cannot be called, though they possess diplomas from whatever medical college,—whose chief business is the production of abortion among the single and the married. This criminal practice is discountenanced by every respectable physician, and the hoodwinking at this crime ought to be frowned down by every true pharmacist. Those who sell those numerous nostrums called golden pills, female pills, &c., &c., to the use of which women are invited by *cautioning them against their use during pregnancy*,—the venders of such nostrums, we say, did they never reflect on the improper uses to which they are put? Did they never consider themselves aiders of and accessories to the crime of abortion? If they did not consider it a crime, let them read Dr. Storer's book, and if that does not convince them, it will convince us that pharmacy can expect as little from *such* followers as the medical science gains from the graduate in medicine who degrades himself to become an abortionist. M.

Serpents in the Dove's Nest. By Rev. John Todd, D. D. I. *Fashionable Murder.* II. *The Cloud with the Dark Lining.* Boston: Lee & Shepard, 1867.

This pamphlet bears on the same subject as the foregoing, considering the crime chiefly in a religious point of view. We wish both works a very wide circulation, so that they might be read by "every woman."

The art of manufacturing Soap and Candles, including the most recent discoveries; embracing all kinds of ordinary hard, soft and toilet soaps, especially those made by the cold process; the modes of detecting frauds, and the making of tallow and composite candles. By Adolph Ott, Ph. D. Philadelphia, Lindsay & Blakiston.

This is a neat little volume of nearly two hundred pages, aiming chiefly at practical instruction. The wood-cuts of apparatus are very well executed, and convey a clear idea of their intrinsic parts. The instructions for making soap and candles are clear and concise, and we think will furnish many useful hints to those interested in that industrial branch. From our personal knowledge of the author, we expected, however, to see the chemical portion of his treatise treated with more regard to the present actual state of this important science. The paragraph "potassa," in chapter ii., states: "This alkali is called in commerce vegetable alkali, sal tartar, pearlash, potash, and hydrated protoxide of potassium." The idea which the author intended to convey is not clearly expressed; for he knows very well that under the above names potassa, its carbonates, and mixtures of the two in different states of purity, are known. The commercial "concentrated lye" that we are acquainted with is not liquid, as stated on page 40. The explanation of the term "fat," on page 57, is scarcely satisfactory, nor is the enumeration of margaric acid among the common fatty acids in consonance with our present knowledge of the fats; for Heintz has long since shown that what has been called margaric acid by Chevreul and afterwards, is a mixture of stearic and palmitic acids, and this latter, though present in most animal and vegetable fats, is not named at all by Mr. Ott. If alcohol, treated with one-half of 50 grains commercial soda, leaves, on evaporation, 20 grains of caustic soda, the commercial article would contain 80, not 40 per cent. of the alkali. Page 44 is to be corrected by reading 100 instead of 50. In chapter v., "valuemetry," the instructions for determining the amount of fat are not clear enough; instead of washing the fat on a filter, it is best washed by repeated fusion with pure water. For determining the amount of rosin in soap, the well known approximate methods are given; we can appreciate the difficulties to be contended with in this case, having ourselves experimented for a lengthy period without arriving at any more satisfactory results. For estimating the amount of alkali in soap, the reader is referred to the chapter on alkalimetry, where commercial alkalies only are treated of.

We are sure that in a new edition the author will remedy such defects; in the meantime we commend it to the favorable notice of those interested.

M.

The art of Perfumery, and the methods of obtaining the odors of plants; with instructions for the manufacture of perfumes for the handkerchief, scented powders, odorous vinegars, dentifrices, pomatums, cosmetics, perfumed soaps, &c. To which is added an appendix on preparing artificial fruit essences, &c. By G. W. Septimus Piesse. Second American, from the third London edition. Philadelphia, Lindsay & Blakiston, 1867.

The original series of papers contained in this volume were reprinted in this journal during the years 1854, '55 and '56. The first American edition was noticed on page 383 of the volume for 1856. The present edition contains about one hundred pages more than the previous one; this enlargement is chiefly made up by collecting the information on the substances used in perfumery, scattered through different works and journals; ottos and odorous plants omitted in the former edition have been added, and some corrections made. Thus we find notices of camphor, cucumber, hodiosmia, musk seed, myrrh, narcissus, peppermint, pimento, rue, &c. The bouquet *Iceland wintergreen* is now stated to be made upon the strength of the *name* of Gaultheria procumbens, while formerly it was credited to Trientalis europæa. Under the head of Laurel, the oil of *Cherry laurel* is noticed; the erroneous statement in the first edition that the oil of the fruit of Laurus nobilis possessed an odor similar to bitter almonds, has been omitted. Recipes for some new perfumes and similar preparations have been added, and a few old ones appear under a new name; thus the *Rifle Volunteers' Garland* is the Windsor Castle Bouquet of the former edition, and *Piesse's Posy* was formerly noticed as Bouquet Royal.

The work is handsomely gotten up by the publishers, and we commend it to the notice of all those who wish to obtain a glimpse into the "secrets of perfumery." There is still room for improvement in noticing odorous plants and ottos, and in omitting recipes for perfumes which have "had their day," and introducing others now in fashion; but since the work was evidently written less for the purpose of giving recipes, but rather to impart a knowledge of *how* combinations of odors are to be effected, the discriminating reader will find much to repay a careful perusal. M.

Scientific Journal: a weekly record of scientific and practical information on manufactures, inventions, mechanics, the arts, &c. $3.00 per annum. Philadelphia, 411 Walnut St.

This new journal will be "devoted to the interests of inventors, manufacturers and patentees," and will "contain useful information upon all subjects connected with such interests." The first seven numbers now before us prove that the editors endeavor to faithfully come up to their promise. The Scientific Journal is ably edited, well printed, and published at a low price. If it continues in the same cosmopolitan spirit, we have no doubt that it will be a "success." M.